

REQUEST FOR PROPOSALS

TECHNICAL ASSISTANCE FOR THE

POWER LOSS REDUCTION TECHNOLOGIES

Submission Deadline: 4:00PM

LOCAL (Abuja) TIME

November 19, 2010

Submission Place: National Power Training Institute of Nigeria
No 1124 Eldoret Close, off Aminu Kano Close
Wuse 2
Abuja, Nigeria
Phone: +2348058007538

SEALED PROPOSALS SHALL BE CLEARLY MARKED AND RECEIVED PRIOR TO THE TIME AND DATE SPECIFIED ABOVE. PROPOSALS RECEIVED AFTER SAID TIME AND DATE WILL NOT BE ACCEPTED OR CONSIDERED.

REQUEST FOR PROPOSALS

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Section 1: INTRODUCTION

The U.S. Trade and Development Agency (USTDA) has provided a grant in the amount of US\$616,000 to the National Power Training Institute of Nigeria (the "Grantee") in accordance with a grant agreement dated August 2, 2010 (the "Grant Agreement") to fund the cost of goods and services required for technical assistance ("TA") on the proposed Power Loss Reduction Technologies project ("Project") in Nigeria ("Host Country"). The Grant Agreement is attached at Annex 4 for reference. The Grantee is soliciting technical proposals from qualified U.S. firms to provide expert consulting services to perform the Technical Assistance.

1.1 BACKGROUND SUMMARY

In 2005, the Power Holding Company of Nigeria (PHCN), the country's state-owned national power utility, was unbundled into 18 separate companies: 1 transmission company, 4 generation companies, and 13 distribution companies. The successor companies have identified the high rate of power loss, which occurs during transmission and distribution, as one of the greatest obstacles to becoming self-sustaining, commercial enterprises. Moreover, the new distribution companies do not have an accurate account of their infrastructure, assets, or customer bases, making solutions to their power loss problems very difficult to find. Consequently, distribution companies are seeking technical solutions to better manage their assets, improve reliability, and become more responsive to the needs of their customers.

The Ministry of Power has identified three distribution companies which have the potential to rapidly generate revenue, evolve into commercial enterprises, and serve as development models for the Nigerian power distribution sector: Eko Electricity Distribution Company, Plc (Lagos); Ikeja Electricity Distribution Company, Plc (Lagos); Abuja Electricity Distribution Company, Plc (Abuja)

This TA will review the three companies' distribution management systems, IT applications, and practices, as well as make technical and operational recommendations concerning new IT applications, systems, and practices to support the companies' goals of improving customer service, reliability, and revenue collection. The TA will also develop an implementation plan, prepare procurement documents, and provide information concerning qualified U.S. sources of supply for the identified technologies.

To address the human capacity challenges faced by these companies, the TA will also deliver comprehensive training sessions to the three companies' senior engineers and technicians on the recommended grid management technologies and practice improvements, highlighting the benefits of smart-grid technologies in meeting the companies' customer service, revenue collection, and outage management goals, as well as providing the technical instruction on the implementation and use of these systems. The successful implementation of the Project is intended to have a demonstration effect on the ten distribution companies not included in this TA, thereby increasing the developmental and commercial benefits of USTDA's assistance

A background Definitional Mission is provided for reference in Annex 2.

1.2 OBJECTIVE

The objective of this technical assistance is to make recommendations on infrastructure and process improvements which can reduce technical and non-technical power distribution losses in Nigeria, and conduct training on the implementation of these technologies. The Ministry of Power has selected three distribution companies (“Companies”) which shall be the focus of this technical assistance:

- 1) Eko Electricity Distribution Company, Plc (“Eko EDC”)
- 2) Ikeja Electricity Distribution Company, Plc (“Ikeja EDC”)
- 3) Abuja Electricity Distribution Company, Plc (“Abuja EDC”)

The technical assistance is intended to improve the efficiency and commercial viability of the selected distribution companies to ensure their long-term viability. As described below, the technical assistance shall focus on network operations, network control, outage management, and customer service improvements through the utilization of modern distribution IT systems.

The Terms of Reference (TOR) for this Technical Assistance are attached as Annex 5.

1.3 PROPOSALS TO BE SUBMITTED

Technical proposals are solicited from interested and qualified U.S. firms. The administrative and technical requirements as detailed throughout the Request for Proposals (RFP) will apply. Specific proposal format and content requirements are detailed in Section 3.

The amount for the contract has been established by a USTDA grant of US\$616,000. **The USTDA grant of US\$616,000 is a fixed amount. Accordingly, COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted.** Upon detailed evaluation of technical proposals, the Grantee shall select one firm for contract negotiations.

1.4 CONTRACT FUNDED BY USTDA

In accordance with the terms and conditions of the Grant Agreement, USTDA has provided a grant in the amount of US\$616,000 to the Grantee. The funding provided under the Grant Agreement shall be used to fund the costs of the contract between the Grantee and the U.S. firm selected by the Grantee to perform the TOR. The contract must include certain USTDA Mandatory Contract Clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA Mandatory Contract Clauses are attached at Annexes 3 and 4, respectively, for reference.

Section 2: INSTRUCTIONS TO OFFERORS

2.1 PROJECT TITLE

The project is called Power Loss Reduction Technologies.

2.2 DEFINITIONS

Please note the following definitions of terms as used in this RFP.

The term "Request for Proposals" means this solicitation of a formal technical proposal, including qualifications statement.

The term "Offeror" means the U.S. firm, including any and all subcontractors, which responds to the RFP and submits a formal proposal and which may or may not be successful in being awarded this procurement.

2.3 DEFINITIONAL MISSION REPORT

USTDA sponsored a Definitional Mission to address technical, financial, sociopolitical, environmental and other aspects of the proposed project. A copy of the report is attached at Annex 2 for background information only. Please note that the TOR referenced in the report are included in this RFP as Annex 5.

2.4 EXAMINATION OF DOCUMENTS

Offerors should carefully examine this RFP. It will be assumed that Offerors have done such inspection and that through examinations, inquiries and investigation they have become familiarized with local conditions and the nature of problems to be solved during the execution of the Technical Assistance.

Offerors shall address all items as specified in this RFP. Failure to adhere to this format may disqualify an Offeror from further consideration.

Submission of a proposal shall constitute evidence that the Offeror has made all the above mentioned examinations and investigations, and is free of any uncertainty with respect to conditions which would affect the execution and completion of the Technical Assistance.

2.5 PROJECT FUNDING SOURCE

The Technical Assistance will be funded under a grant from USTDA. The total amount of the grant is not to exceed US\$616,000.

2.6 RESPONSIBILITY FOR COSTS

Offeror shall be fully responsible for all costs incurred in the development and submission of the proposal. Neither USTDA nor the Grantee assumes any obligation as a result of the issuance of this RFP, the preparation or submission of a proposal by an Offeror, the evaluation of proposals, final selection or negotiation of a contract.

2.7 TAXES

Offerors should submit proposals that note that in accordance with the USTDA Mandatory Contract Clauses, USTDA grant funds shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in the Host Country.

2.8 CONFIDENTIALITY

The Grantee will preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror, to the extent permitted by the laws of the Host Country.

2.9 ECONOMY OF PROPOSALS

Proposal documents should be prepared simply and economically, providing a comprehensive yet concise description of the Offeror's capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content.

2.10 OFFEROR CERTIFICATIONS

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with, and agreement of, any undisclosed group, association, organization, or corporation; (b) that it has not directly or indirectly induced or solicited any other Offeror to put in a false proposal; (c) that it has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and (d) that it has not sought by collusion to obtain for itself any advantage over any other Offeror or over the Grantee or USTDA or any employee thereof.

2.11 CONDITIONS REQUIRED FOR PARTICIPATION

Only U.S. firms are eligible to participate in this tender. However, U.S. firms may utilize subcontractors from the Host Country for up to 20 percent of the amount of the USTDA grant for specific services from the TOR identified in the subcontract. USTDA's nationality requirements, including definitions, are detailed in Annex 3.

2.12 LANGUAGE OF PROPOSAL

All proposal documents shall be prepared and submitted in English, and only English.

2.13 PROPOSAL SUBMISSION REQUIREMENTS

The **Cover Letter** in the proposal must be addressed to:

**National Power Training Institute of Nigeria
No 1124 Eldoret Close, off Aminu Kano Close
Wuse 2
Abuja, Nigeria
Phone: +2348058007538**

An Original and eight (8) copies of your proposal must be received at the above address no later than 4:00pm Local (Abuja) Time, on November 19, 2010.

Proposals may be either sent by mail, overnight courier, or hand-delivered. Whether the proposal is sent by mail, courier or hand-delivered, the Offeror shall be responsible for actual delivery of the proposal to the above address before the deadline. Any proposal received after the deadline will be returned unopened. The Grantee will promptly notify any Offeror if its proposal was received late.

Upon timely receipt, all proposals become the property of the Grantee.

2.14 PACKAGING

The original and each copy of the proposal must be sealed to ensure confidentiality of the information. The proposals should be individually wrapped and sealed, and labeled for content including "original" or "copy number x"; the original and eight (8) copies should be collectively wrapped and sealed, and clearly labeled.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly wrapped, sealed and labeled.

2.15 AUTHORIZED SIGNATURE

The proposal must contain the signature of a duly authorized officer or agent of the Offeror empowered with the right to bind the Offeror.

2.16 EFFECTIVE PERIOD OF PROPOSAL

The proposal shall be binding upon the Offeror for NINETY (90) days after the proposal due date, and Offeror may withdraw or modify this proposal at any time prior to the due date upon written request, signed in the same manner and by the same person who signed the original proposal.

2.17 EXCEPTIONS

All Offerors agree by their response to this RFP announcement to abide by the procedures set forth herein. No exceptions shall be permitted.

2.18 OFFEROR QUALIFICATIONS

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory, technical assistance and/or other services similar to those required in the TOR, as applicable.

2.19 RIGHT TO REJECT PROPOSALS

The Grantee reserves the right to reject any and all proposals.

2.20 PRIME CONTRACTOR RESPONSIBILITY

Offerors have the option of subcontracting parts of the services they propose. The Offeror's proposal must include a description of any anticipated subcontracting arrangements, including the name, address, and qualifications of any subcontractors. USTDA nationality provisions apply to the use of subcontractors and are set forth in detail in Annex 3. The successful Offeror shall cause appropriate provisions of its contract, including all of the applicable USTDA Mandatory Contract Clauses, to be inserted in any subcontract funded or partially funded by USTDA grant funds.

2.21 AWARD

The Grantee shall make an award resulting from this RFP to the best qualified Offeror, on the basis of the evaluation factors set forth herein. The Grantee reserves the right to reject any and all proposals received and, in all cases, the Grantee will be the judge as to whether a proposal has or has not satisfactorily met the requirements of this RFP.

2.22 COMPLETE SERVICES

The successful Offeror shall be required to (a) provide local transportation, office space and secretarial support required to perform the TOR if such support is not provided by the Grantee; (b) provide and perform all necessary labor, supervision and services; and (c) in accordance with best technical and business practice, and in accordance with the requirements, stipulations, provisions and conditions of this RFP and the resultant contract, execute and complete the TOR to the satisfaction of the Grantee and USTDA.

2.23 INVOICING AND PAYMENT

Deliverables under the contract shall be delivered on a schedule to be agreed upon in a contract with the Grantee. The Contractor may submit invoices to the designated Grantee Project Director in accordance with a schedule to be negotiated and included in the contract. After the Grantee's approval of each invoice, the Grantee will forward the invoice to USTDA. If all of the requirements of USTDA's Mandatory Contract Clauses are met, USTDA shall make its respective disbursement of the grant funds directly to the U.S. firm in the United States. All payments by USTDA under the Grant Agreement will be made in U.S. currency. Detailed provisions with respect to invoicing and disbursement of grant funds are set forth in the USTDA Mandatory Contract Clauses attached in Annex 4.

Section 3: PROPOSAL FORMAT AND CONTENT

To expedite proposal review and evaluation, and to assure that each proposal receives the same orderly review, all proposals must follow the format described in this section.

Proposal sections and pages shall be appropriately numbered and the proposal shall include a Table of Contents. Offerors are encouraged to submit concise and clear responses to the RFP. Proposals shall contain all elements of information requested without exception. Instructions regarding the required scope and content are given in this section. The Grantee reserves the right to include any part of the selected proposal in the final contract.

The proposal shall consist of a technical proposal only. A cost proposal is NOT required because the amount for the contract has been established by a USTDA grant of US\$616,000, which is a fixed amount.

Offerors shall submit one (1) original and eight (8) copies of the proposal. Proposals received by fax cannot be accepted.

Each proposal must include the following:

- Transmittal Letter,
- Cover>Title Page,
- Table of Contents,
- Executive Summary,
- Company Information,
- Organizational Structure, Management Plan, and Key Personnel,
- Technical Approach and Work Plan, and
- Experience and Qualifications.

Detailed requirements and directions for the preparation of the proposal are presented below.

3.1 EXECUTIVE SUMMARY

An Executive Summary should be prepared describing the major elements of the proposal, including any conclusions, assumptions, and general recommendations the Offeror desires to make. Offerors are requested to make every effort to limit the length of the Executive Summary to no more than five (5) pages.

3.2 COMPANY INFORMATION

For convenience, the information required in this Section 3.2 may be submitted in the form attached in Annex 6 hereto.

3.2.1 Company Profile

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), the information requested in sections 3.2.5 and 3.2.6 below must be provided for each subcontractor.

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).
3. Type of ownership (e.g. public, private or closely held).
4. If private or closely held company, provide list of shareholders and the percentage of their ownership.
5. List of directors and principal officers (President, Chief Executive Officer, Vice-President(s), Secretary and Treasurer; provide full names including first, middle and last). Please place an asterisk (*) next to the names of those principal officers who will be involved in the Technical Assistance.
6. If Offeror is a subsidiary, indicate if Offeror is a wholly-owned or partially-owned subsidiary. Provide the information requested in items 1 through 5 above for the Offeror's parent(s).
7. Project Manager's name, address, telephone number, e-mail address and fax number.

3.2.2 Offeror's Authorized Negotiator

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

3.2.3 Negotiation Prerequisites

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Technical Assistance as proposed and reflect such impact within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

3.2.4 Offeror's Representations

If any of the following representations cannot be made, or if there are exceptions, the Offeror must provide an explanation.

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of _____. The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Technical Assistance. The Offeror is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of _____. The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

3.2.5 Subcontractor Profile

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).

3.2.6 Subcontractor's Representations

If any of the following representations cannot be made, or if there are exceptions, the Subcontractor must provide an explanation.

1. Subcontractor is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of _____ . The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the Offeror is selected, to execute and deliver a subcontract to the Offeror for the performance of the Technical Assistance and to perform the Technical Assistance. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. Neither the subcontractor nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.

5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

3.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND KEY PERSONNEL

Describe the Offeror's proposed project organizational structure. Discuss how the project will be managed including the principal and key staff assignments for this Technical Assistance. Identify the Project Manager who will be the individual responsible for this project. The Project Manager shall have the responsibility and authority to act on behalf of the Offeror in all matters related to the Technical Assistance.

Provide a listing of personnel (including subcontractors) to be engaged in the project, including both U.S. and local subcontractors, with the following information for key staff: position in the project; pertinent experience, curriculum vitae; other relevant information. If subcontractors are to be used, the Offeror shall describe the organizational relationship, if any, between the Offeror and the subcontractor.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the Technical Approach and Work Plan shall be submitted. A statement confirming the availability of the proposed project manager and key staff over the duration of the project must be included in the proposal.

3.4 TECHNICAL APPROACH AND WORK PLAN

Describe in detail the proposed Technical Approach and Work Plan (the "Work Plan"). Discuss the Offeror's methodology for completing the project requirements. Include a brief narrative of the Offeror's methodology for completing the tasks within each activity series. Begin with the information gathering phase and continue through delivery and approval of all required reports.

Prepare a detailed schedule of performance that describes all activities and tasks within the Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones.

Based on the Work Plan, and previous project experience, describe any support that the Offeror will require from the Grantee. Detail the amount of staff time required by the Grantee or other participating agencies and any work space or facilities needed to complete the Technical Assistance.

3.5 EXPERIENCE AND QUALIFICATIONS

Provide a discussion of the Offeror's experience and qualifications that are relevant to the objectives and TOR for the Technical Assistance. If a subcontractor(s) is being used, similar information must be provided for the prime and each subcontractor firm proposed for the project. The Offeror shall provide information with respect to relevant experience and qualifications of key staff proposed. The Offeror shall include letters of commitment from the individuals proposed confirming their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided for each of the Offeror and any subcontractor, including the following information:

Project name,
Name and address of client (indicate if joint venture),
Client contact person (name/ position/ current phone and fax numbers),
Period of Contract,
Description of services provided,
Dollar amount of Contract, and
Status and comments.

Offerors are strongly encouraged to include in their experience summary primarily those projects that are similar to or larger in scope than the Technical Assistance as described in this RFP. Offerors may use template in Annex 7 or their own template.

Section 4: AWARD CRITERIA

Individual proposals will be initially evaluated by a Procurement Selection Committee of representatives from the Grantee. The Committee will then conduct a final evaluation and completion of ranking of qualified Offerors. The Grantee will notify USTDA of the best qualified Offeror, and upon receipt of USTDA's no-objection letter, the Grantee shall promptly notify all Offerors of the award and negotiate a contract with the best qualified Offeror. If a satisfactory contract cannot be negotiated with the best qualified Offeror, negotiations will be formally terminated. Negotiations may then be undertaken with the second most qualified Offeror and so forth.

The selection of the Contractor will be based on the following criteria:

1. Experience of the firm in distribution
Management IT systems 25%
2. International experience of the firm in prior similar power projects 15%
3. Experience of the firm in similar projects

in Africa	5%
4. Experience of the Proposed Experts	20%
5. Technical approach of the firm for developing the project	20%
6. Approach for economic analysis and financing of IT systems in distribution utilities	10%
7. Local Participation	5%

Proposals that do not include all requested information may be considered non-responsive.

Price will not be a factor in contractor selection.

ANNEX 1

National Power Training Institute of Nigeria
No 1124 Eldoret Close, off Aminu Kano Close
Wuse 2
Abuja, Nigeria
Phone: +2348058007538

2010-11027A Loss Reduction Technologies

POC: Nina Patel, USTDA, 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009. Loss Reduction Technologies. The Grantee invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms that are qualified on the basis of experience and capability to provide technical assistance for three of Nigeria's newly formed power distribution companies in reducing their high rates of technical and commercial power losses. The TA will assess each company's grid monitoring and control systems, make recommendations on infrastructure improvements to enhance the companies' capacities to monitor and control power distribution, and provide training on loss reduction and smart-grid technologies.

In 2005, the Power Holding Company of Nigeria (PHCN), the country's state-owned national power utility, was unbundled into 18 separate companies: 1 transmission company, 4 generation companies, and 13 distribution companies. The successor companies have identified the high rate of power loss, which occurs during transmission and distribution, as one of the greatest obstacles to becoming self-sustaining, commercial enterprises. Moreover, the new distribution companies do not have an accurate account of their infrastructure, assets, or customer bases, making solutions to their power loss problems very difficult to find. The distribution companies are thus seeking technical solutions to better manage their assets, improve reliability, and become more responsive to the needs of their customers.

The Ministry of Power has identified three distribution companies which have the potential to rapidly generate revenue, evolve into commercial enterprises, and serve as development models for the Nigerian power distribution sector: Eko Electricity Distribution Company, Plc (Lagos); Ikeja Electricity Distribution Company, Plc (Lagos); Abuja Electricity Distribution Company, Plc (Abuja)

This TA will review the three companies' distribution management systems, IT applications, and practices, as well as make technical and operational recommendations concerning new IT applications, systems, and practices to support the companies' goals of improving customer service, reliability, and revenue collection. The TA will also develop an implementation plan, prepare procurement documents, and provide information concerning qualified U.S. sources of supply for the identified technologies.

To address the human capacity challenges faced by these companies, the TA will also deliver comprehensive training sessions to the three companies' senior engineers and technicians on the recommended grid management technologies and practice improvements, highlighting the benefits of smart-grid technologies in meeting the

companies' customer service, revenue collection, and outage management goals, as well as providing the technical instruction on the implementation and use of these systems. The successful implementation of the Project is intended to have a demonstration effect on the ten distribution companies not included in this TA, thereby increasing the developmental and commercial benefits of USTDA's assistance.

The U.S. firm selected will be paid in U.S. dollars from a \$616,000 grant to the Grantee from the U.S. Trade and Development Agency (USTDA).

A detailed Request for Proposals (RFP), which includes requirements for the Proposal, the Terms of Reference, and a background definitional mission/desk study report are available from USTDA, at 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901. To request the RFP in PDF format, please go to:

<https://www.ustda.gov/businessopps/rfpform.asp>. Requests for a mailed hardcopy version of the RFP may also be faxed to the IRC, USTDA at 703-875-4009. In the fax, please include your firm's name, contact person, address, and telephone number. Some firms have found that RFP materials sent by U.S. mail do not reach them in time for preparation of an adequate response. Firms that want USTDA to use an overnight delivery service should include the name of the delivery service and your firm's account number in the request for the RFP. Firms that want to send a courier to USTDA to retrieve the RFP should allow one hour after faxing the request to USTDA before scheduling a pick-up. Please note that no telephone requests for the RFP will be honored. Please check your internal fax verification receipt. Because of the large number of RFP requests, USTDA cannot respond to requests for fax verification. Requests for RFPs received before 4:00 PM will be mailed the same day. Requests received after 4:00 PM will be mailed the following day. Please check with your courier and/or mail room before calling USTDA.

Only U.S. firms and individuals may bid on this USTDA financed activity. Interested firms, their subcontractors and employees of all participants must qualify under USTDA's nationality requirements as of the due date for submission of qualifications and proposals and, if selected to carry out the USTDA-financed activity, must continue to meet such requirements throughout the duration of the USTDA-financed activity. All goods and services to be provided by the selected firm shall have their nationality, source and origin in the U.S. or host country. The U.S. firm may use subcontractors from the host country for up to 20 percent of the USTDA grant amount. Details of USTDA's nationality requirements and mandatory contract clauses are also included in the RFP.

Interested U.S. firms should submit their Proposal in English directly to the Grantee by **November 19, 2010, 4:00pm, local (Abuja) time**, at the above address. Evaluation criteria for the Proposal are included in the RFP. Price will not be a factor in contractor selection, and therefore, cost proposals should NOT be submitted. The Grantee reserves the right to reject any and/or all Proposals. The Grantee also reserves the right to contract with the selected firm for subsequent work related to the project. The Grantee is not bound to pay for any costs associated with the preparation and submission of Proposals.

ANNEX 2

A. EXECUTIVE SUMMARY

Context and Background

The Sub-Saharan Region in Africa is divided into several sub-regions because of its vastness and the number of countries in the Region. The electricity grid in the Region consists of individual countries' grids and a number of regional interconnections. In an attempt to harmonize regional power sector policies, regulations, and tariffs and to promote electricity trade among the countries a number of power pools have been formed under high-level policy initiatives of the Ministers of various countries. These include the Southern African Power Pool (SAPP), Western African Power Pool (WAPP), the Eastern African Power Pool (EAPP), Maghreb Electricity Committee (COMELEC), and the Central African Power Pool (CAPP). In addition, a number of regional bodies have been established that have high-level regional energy committees that are responsible for regional energy policies through a number of regional agreements and memoranda that have been signed by relevant parties. Some of the active regional bodies include the Southern African Development Community (SADC), the Economic and Social Commission of West African States (ECOWAS), New Partnership for Africa's Development (NEPAD), and the Economic Community of Central African States (ECCAS).

Also, regional regulatory bodies have been developed over the last 6 years that are engaged in regulatory reform to encourage the development and financing of new power generation and T&D Projects. African Forum for Utility Regulators (AFUR) and Regional Electricity Regulators Association (RERA) are two of the most active regional bodies and several countries in the WAPP region (including Nigeria) have become members of AFUR.

Nigerian Power Sector Background

Nigeria is a vast country with extensive resources and widespread poverty. The Nigerian power sector continues to face all of the common problems associated with electricity sectors in various developing countries. These include: (i) old and dilapidated power plants and transmission and distribution networks, (ii) poor system maintenance and virtual absence of preventive maintenance, (iii) poor financial performance of the enterprises and a lack of investment funds, (iv) poor institutional capacity and outdated skills of utility engineers and technicians, (v) unreliable power supply and service with frequent and long power cuts and interruptions, (vi) high technical and non-technical losses, and (vii) rampant corruption.

Complicating this situation further is the institutional turmoil that Nigeria faced during the last 12 months. The former Minister, Fatima Ibrahim was removed and replaced by Minister Lanre Babalola. The entire top management of PHCN was fired abruptly and all of the Commissioners of NERC were arrested and fired from their posts. In addition, there is a change in the Executive branch with the appointment of the Acting president who has announced new cabinet appointments. These events have created some uncertainty in the top management of the power sector in the country.

The following are some of the highlights of the current power sector status in Nigeria:

1. The proposals of the Presidential Accelerated Expansion Committee were accepted after being presented to the National Executive Council (NEC). This Committee was chaired by the Minister of Power, and included private sector representatives, some of whom are also on the Board of the Africa Finance Corporation (AFC). Committee members included the Chief Economic Adviser, and the Chairman of NERC as Secretary. The much-publicized proposals included the statement that the private sector would finance the expansion, which essentially involved the completion of the stalled NIPP program of power station build and associated transmission and distribution reinforcement.
2. The program of power expansion is now the policy and the plan of the country for all power sector project planning and investment programming. As a background the reasonably consistent available capacity currently is 2500 MW, but that has recently fallen frequently below 1800 MW due to water levels, gas pipeline vandalism, and lack of funds to pay for gas to the privatized Egbin power station. In early May 2008, available capacity dropped to 800 MW, and an attempt to move 50 MW to an area where the President was on a visit resulted in the fifth system collapse in two weeks. Current transmission capacity may stretch to 5000 MW, but with low levels of security of supply.
3. The AFC has publicized its process for revitalizing the power capacity build program, and was to embark on a due diligence process. As far as can be ascertained from industry sources, this due diligence has not commenced. Following the announcement, the AFC became embroiled in a political storm regarding its status and funding, and the role of the Central Bank. The AFC Chief Executive's activities have also been subject to adverse press coverage.
4. The private sector's conditions for making the investment through a Special Purpose Vehicle (SPV) linked with the AFC are considered too onerous by the Government. Therefore, the Government is looking for the World Bank to support one or two IPPs and possibly the rehabilitation of the existing capacity to bring it back up to 6000 MW. There is concern in the Government regarding the timetable with which the World Bank moves as the needs of the power sector are urgent.
5. Other options of Government funding are being considered once more, such as the excess Crude Account, which was previously applied to the NIPP program before being frozen on legal grounds. It appears that Government funding will require approvals from the National Assembly and the States as owners of their individual shares of the Excess Crude Account. The objective is apparently to sell off the power stations to the private sector upon completion. This process is also politically marred and is moving very slowly.

6. The current World Bank support to Nigeria in the power sector relates to partial risk guarantees (PRG), one without conditions for a small to medium sized IPP, and a larger and later one with more detailed and stringent conditions. The Ministry of Power's most urgent priority is to move forward at least one IPP with some form of PRG from the World Bank. Currently the World Bank is preparing a new project that focuses heavily on the deployment of renewable energy in the country and expanding rural electrification.

Power Sector Regulatory Regime in Nigeria

Since the dismissal of the commissioners at NERC, The Government has installed an Administrator of NERC who is guiding the day-to-day work of regulating the power sector in the country. It is not clear when the Government will appoint new commissioners. The current regulatory regime is not conducive to IPP investments for a variety of reasons as follows:

1. The Market Model is not well defined and the market rules are lagging when contrasted with international benchmarks for IPP investments. However, in recent month NERC has made significant progress. A new Multi-Tariff Tariff Order (MYTO) has been issued. In addition, licensing procedures and tariff methodologies are being revised to reflect international practices.
2. The tariff regime needs to be rationalized and the MYTO needs to be revisited if the utilities are going to be required to include renewable energy in their generation expansion plans. A feed-in tariff regime needs to be developed and implemented in order to encourage the deployment of the country's renewable energy resources, especially solar and wind power.
3. While NERC has won Presidential and NEC approval for the "adoption" of MYTO, it may not be the correct approach for tariff setting in a volatile market and the current economic uncertainties where international fuel prices are changing sporadically. A more effective approach may be to allow for a fuel price adjustment clause in Power Purchase Agreements (PPAs) and allow for more frequent tariff adjustments. The current tariffs are not cost-reflective and that is also a major barrier to private sector investments.
4. The issue of gas availability for power generation and gas pricing continues to be a major obstacle to improving the performance of power sector in the country.

Gas Policy

It is important to understand the gas policy in Nigeria as it relates to the availability or lack thereof of gas to power plants in the country. This can be summarized as a rapid expansion, but within an administered price regime with large cross subsidies, controlled by a single Government owned buyer. The administered prices result in very low prices for gas for power, but without clarity as to how security of supply can be achieved. The gas is to be transported through an "integrated pipeline network" to power

stations, but the transportation price is a fixed value irrespective of distance. This will incentivize only power stations close to the gas source, even if power transmission costs exceed gas transportation costs. The net result of these distortions is that many plants are not able to get gas and are operating below available capacity.

Key Risks in the Government's Current Power Sector Plan and Policy

The following are some of the risks evident in the Government's power sector policy and plans:

- **Implementation Risk** – The policy and plans may have put in enough investments in the sector, but the power sector entities lack capacity and capability in key areas such as project management, commercial management, change management, business infrastructure, and investment program management.
- **Funding** – It is not clear if funds can be obtained from Government revenues or from investors. The current investment and capacity expansion model does not provide sufficient certainty to enable investment and borrowing.
- **Concentration of Risks** – The centralized model for both capacity and governance precludes local initiatives.
- **Timing** – The current time table of the Government, designed to addresses the urgency in the sector, may be too ambitious.
- **Cash Flows** – Even using PHCN data, the cash flow improvement targets are ambitious, and as of now no integrated management program exists to deliver the benefits to the service providers and the consumers.
- **Subsidy Risk** – There are numerous questions related to the current subsidy regime in the country. For example, what is the risk to the fixed level of subsidies? How can this risk be managed without running into a cash flow crisis again?
- **Labor Issues** - None of the plans or policies addresses the issue of obligations brought forward and inefficiencies in labor – pension liabilities, excess labor, and retrenchment as a result of unbundling the power sector. Many of these issues are slowing down sector investment decisions.

Objectives of the Definitational Mission (DM)

The objectives of the definitional mission were as follows:

- Consult with key USTDA officials regarding the DM objectives and ways to measure the development impact of recommended USTDA activities
- Contact MCC, OPIC, EXIM, U.S. Department of Commerce, other pertinent U.S. government agencies, the World Bank and IFC, and the AfDB to gather information necessary to perform the DM
- Conduct initial research on the energy sector in Nigeria before traveling to identify the opportunities best suited for USTDA involvement

- Identify and develop at least four potential projects that would meet USTDA criteria for funding feasibility studies and technical assistance.
- Travel to Nigeria to meet with key project sponsors as well as review new potential project opportunities for USTDA's consideration
- Prepare and submit a detailed DM report in accordance with the requirements for such reports provided in the DM solicitation.

During the period February 6 – 17, 2010, the DM traveled to Nigeria based on an itinerary approved by USTDA. The U.S. Embassy in Abuja provided extensive support to organize the meetings for the DM. Annex I includes a detailed list of contacts in Nigeria. During the field mission the DM held discussions with a large number of public and private sector officials in Nigeria. A total of 30 meetings were held and some 20 projects were evaluated for possible USTDA assistance.

At the end of the field mission, CORE International communicated key findings and initial conclusions to USTDA officials. A copy of these communications was also provided to the Senior Economic and Commercial Officer. In addition, the DM made a presentation to the Deputy Chief of Mission and the Head of the Economic Section at the American Embassy in Abuja.

B. PROJECT DESCRIPTION

1. Regional Background

The Sub-Saharan Region in Africa is divided into several sub-regions because of its vastness and the number of countries in the Region. The electricity grid in the Region consists of individual countries' grids and a number of regional interconnections. In an attempt to harmonize regional power sector policies, regulations, and tariffs and to promote electricity trade among the countries a number of power pools have been formed under high-level policy initiatives of the Ministers of various countries. These include the Southern African Power Pool (SAPP), Western African Power Pool (EAPP), Maghreb Electricity Committee (COMELEC), and the Central African Power Pool (CAPP). In addition, a number of regional bodies have been established that have high-level regional energy committees that are responsible for regional energy policies through a number of regional agreements and memoranda that have been signed by relevant parties. Some of the active regional bodies include the Southern African Development Community (SADC), the Economic and Social Commission of West African States (ECOWAS), New Partnership for Africa's Development (NEPAD), and the Economic Community of Central African States (ECCAS).

Also, regional regulatory bodies have been developed over the last 6 years that are engaged in regional regulatory reform to encourage the development and financing of new power generation, transmission, and distribution (T&D) Projects. African Forum for Utility Regulators (AFUR) and Regional Electricity Regulators Association (RERA) are two of the most active regional bodies and several countries in the WAPP region including Nigeria) have become members of AFUR.

All countries in the region are facing shortage of electricity due to a variety of reasons including the following:

- Constant political interference in the power sector requiring the provision of free electricity, often to those who can afford to pay, has financially broken the sector to the point that the current supply simply cannot keep pace with demand.
- Investments in new capacity expansion projects have been lagging behind very seriously in some countries as a result of poor financial conditions of the national utilities and a lack of appropriate policy and regulatory climate to encourage private sector investments.
- Most of the power plants have not been maintained properly and indeed many suffer from a lack of spare parts resulting in these plants operating at much lower than their rated capacities.
- The transmission and distribution networks are dilapidated and poorly maintained resulting in poor quality of supply and service.
- The technical and non-technical losses are some of the highest in the world. The non-technical losses (theft of electricity) are a chronic problem in all of the countries.
- Individual economies are too small to be able to afford or absorb reasonable sized generation and transmission projects. Therefore, regional solutions need to be forged. However, given the vast political, social, and cultural differences among the countries, regional bodies are not very effective and are slow in their development.

Given these realities, planning and development of feasible power projects in some regions of Africa is complicated at best.

2. Energy Sector Setting in Nigeria

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Given the wide spread impact of power shortages and poor quality power on all segments of the Nigerian economy, the Government of Nigeria has placed a renewed priority on improving the power sector in the countries. The following are some of the initiatives that the Government is planning to implement aggressively:

- Completion of the unbundling of the power sector and strengthening the technical and management capacity of the full array of 18 unbundled companies – 4 generation companies, 1 transmission company, and 13 distribution companies.
- Opening the Nigerian Power market to IPPs through an extensive revision of the investment incentives and the design and implementation of cost-reflective tariffs
- Revising the Government's Gas Policy to improve gas production and gas availability for the power sector. A major constraint to the lack of gas availability to the power sector continues to be the relatively low gas prices and the Government is in discussions with the International Oil Companies (IOCs) to address this major problem.
- In order to promote business relationships between the US and Nigerian firms, the government is planning to dispatch a large delegation of Nigerian public and private sector officials to the U.S. in late April 2010 under the umbrella of U.S.-Nigeria Business Partnership. A key focus of this mission to the U.S. is to promote investments in the country's energy sector.
- Development of new feed-in tariff regulations and simplified licensing procedures to encourage small-scale IPPs to exploit the vast renewable energy resources in Nigeria. This policy will include small hydro as well as solar and wind power development in various states of the country.
- A nationwide effort to upgrade the technology systems at the distribution level aimed at improving (i) network operations, (ii) network control, (iii) metering, billing, and collections, and (iv) financial management. All of these initiatives are expected to reduce losses and costs and improve the quality of supply and service to the consumers.
- A national strategy to improve the capacity and skills of tens of thousands of utility personnel and contractors. In September 2009, the Government of Nigeria launched the National Power Training Institute of Nigeria (NAPTIN) to take the lead in providing capacity building and training to utility employees across the country.

These developments and the renewed commitment of the Government to address the energy sector problems create an attractive environment for U.S. businesses to participate in Nigeria's power sector.

3. Pre-Mission Activities

Prior to undertaking the field mission, the DM developed a detailed itinerary and contacted the American Embassy in Nigeria to schedule meetings with key entities in these countries. In addition, as required under the contract, the DM prepared and submitted a Pre-Mission Report to USTDA.

Prior to departing for the field mission, the following activities were completed:

- Discussions were held with Mr. Nathan Gazzetta, Country Manager at USTDA on the pressing needs of the power sector in Nigeria. The USTDA officials also provided relevant in-country contacts including contacts at the American embassy in Nigeria.
- USTDA also provided CORE specific instructions on the key aspects of this definitional mission – issues surrounding the priorities of Nigeria and the need for evaluating proposals carefully.
- CORE has also conducted initial reviews of various proposals that were provided to the DM. These include the following proposals:
 - Airport Wind Resource Assessment feasibility Study for the National Airport Authority
 - Feasibility Study for a 5 MW biomass power plant at the Multi-Trex Cocoa Facility
 - Power and Transportation Studies for the LADOL Free Zone

CORE contacted the key contacts in the American Embassy in Nigeria to discuss the background on the power sector needs in Nigeria and requested assistance for meetings. The American Embassy developed a comprehensive schedule of meetings for the DM in Abuja and Lagos. The Economics and Commercial Officer at the embassy accompanied the DM to all of the meetings. In addition, USTDA officials also joined some of the meetings as they were in the region for a variety of activities.

4. U.S. Companies' Interest in Nigeria

Many U.S. firms are simply not very motivated to pursue business in Nigeria despite the large market in the power sector. The reasons for this lack of interest are many and varied. First, because of a long colonial history in the region French firms have an advantage over competitors from other countries except China that continues to invade Africa with proposals for cheap power plants and financing on very attractive terms. Secondly, the U. S. industry believes that investments in Nigeria face high risks. Thirdly, corruption is a major cause for most American firms who abide by all of the U.S. Laws including the Foreign Corrupt Practices Act.

Despite these negatives, the mere size of Nigeria and the prospects for billions of dollars of new investment in the energy sector, U.S. firms are very interested in capturing a share of Nigeria's power market. In recent months, senior executives of many U.S. firms, including the CEO of General Electric Company, have visited Nigeria to explore opportunities in the energy sector. Discussions with a number of firms have indicated a renewed interest in the country's power sector.

5. Summary of Discussions During the Field Mission

The DM held discussions with a large number of public and private sector officials involved in the energy sector in Nigeria. Annex I includes a complete list of contacts made during the Definitive Mission. This section provides a summary of discussions during some of the key meetings that founded the basis for CORE's recommendations.

5.1: Meeting with Dr. Sanusi Garba, Director of Power, Ministry of Power

Dr. Garba stressed the need for a renewed focus on improving the power sector in Nigeria. The following are some of the key points raised during this meeting:

- Despite the fact that the installed capacity in the country is around 8,000 MW, only 3,000 MW is available mainly due to a lack of supply of gas for the power sector.
- While the eastern part of the country has surplus gas, the western part has extreme shortage and the country is limited by pipeline capacity.
- The Government is funding a rehabilitation of existing power station with the anticipation that the available capacity will increase to 4,700 MW over the next few years.
- The subsidy provided to PHCN in the amount of N177 billion did not achieve the goal of 6,000 MW of available capacity due to a variety of reasons that are under review. NERC has estimated that another N40 billion is needed in additional subsidy to reach the 6,000 MW target.
- The specific challenges in the power sector as outlined during the meeting include (i) a lack of enabling framework for IPPs – only one of the 20 licences issued for IPPs is operational, (ii) power sector management, and (iii) capacity and skills of power sector managers and technicians. In addition, the PPAs include many inherent risks and the Government needs to look at this issue more carefully.
- The Government plans to phase out PHCN by the end of 2010 which would make GENCOs the off-takers of power from any IPPs. In order to facilitate this process, the Government is prepared to provide sovereign guarantee to prospective IPPs. However, this policy is not supported by most donors.
- The management of all aspects – generation, transmission, and distribution needs to be significantly improved.

Key areas of high priority for the Government include (i) acceleration of the deployment of renewable energy resources, (ii) diversification of generation mix, (iii) developing an enabling environment for IPPs, (iv) development of new coal-fired power plants, and (v) distribution upgrade and modernization to reduce losses and improve quality of supply and service. The financial sustainability of the distribution sector was underscored several times during the meeting.

5.2: Meeting with Mr. Reuben Okeke, CEO, National Power Training Institute of Nigeria (NAPTIN)

The discussion during this meeting focused on the widespread lack of capacity and skills in the power sector in the country. Specifically, there is a dire need for improving the skills of the 13 distribution companies throughout the country in a host of distribution management areas ranging from basic system maintenance to modern methods for commercial operations and management.

The CEO of NAPTIN requested specific assistance to provide training to utility personnel throughout the country as this is a major constraint to the performance of the power sector. Currently, GTZ of Germany, DFID of UK, and the World Bank are providing technical support to NAPTIN in selected areas. However, the needs of the sector far outweigh the currently available support. The Government has committed N700 million as part of the 2009-2010 appropriations. In addition, N1.5 billion could be available from the intervention fund. The Government has allocated an additional N433 million as part of the 2010-2011 appropriations for capital expenditures.

NAPTIN is convinced that the power sector in the country needs assistance in upgrading its technology throughout the supply chain with the greatest need for technology and skills upgrade in the distribution sector.

5.3: Meeting with Minister of State for Power – Minister Way and the Top Management of Ministry of Power

The Minister chaired the meeting and underscored the problems in the power sector. Specifically, the Minister requested USTDA assistance in assessing the feasibility of harness the potential of small-scale hydropower power and wind power throughout the country. The current priority of the Government is to develop small-scale manageable power projects utilizing the country's hydro and wind resources.

The Minister also stressed that the Government will issue a target for renewable energy utilization in the country's generation mix and encourage NERC to issue regulations for licensing procedures and feed-in tariffs to encourage IPPs in this sector.

5.4: Meeting with the IPP Association of Nigeria (IPPAN)

The American Embassy organized a group meeting at the embassy with 13 representatives of the IPP industry in Nigeria. During the meeting the DM Consultant made a presentation on international experience with IPPs and implications for Nigeria. The members of IPPAN discussed the constraints that they see with the industry and made a number of suggestions on how the Government could play a more aggressive role in promoting IPPs in Nigeria.

Some of the risks and uncertainties making IPPs difficult in Nigeria include: (i) lack of a market model and identification of key off-takers, (ii) gas availability and gas prices, (iii) problems associated with labor unions, and (iv) a lack of cost-reflective tariffs. The IPPAN members were represented by Professor Bart Nnaji who has been appointed by the Acting President to post of Deputy Chairman of the National Power Committee to be established with the Acting President as the Chairman under the new Government announcements.

5.5: Participation in a Major Briefing by the Petroleum Minister

The embassy representative, USTDA officials, and the DM Consultant participated in a major meeting held by the former Petroleum Minister Lukman. The participants in the meeting included a large number of officials from the oil industry, the power industry and various agencies of the Government. The key issues discussed during the meeting included the supply and price of gas. The Minister urged the IOCs to increase the production and supply of gas and reduce flares and losses.

5.6: Meeting with the Minister of Aviation

During this meeting Minister Babatunde discussed the need for exploring the potential for renewable energy applications at the Lagos and Abuja airports. The Minister pointed out that solar PV systems could be used as a source of back-up power at the airports for basic operations and terminal activities. Other issues discussed included new air routes for additional airlines and modification of the Abuja airport for additional regional flights to other countries in Africa. The international terminal is presently a CAT-II facility and is congested. Therefore, the Government is considering modification of the terminal through an international concession. The plans also include the modification of the domestic terminal and the general aviation terminal in Lagos. The Minister and the officials of the embassy also discussed the contents of the Air Marshall Training and the MOU between the TSA and the Ministry. No specific requests were made for USTDA assistance in this meeting.

5.7: Meeting with the Director General of Nigeria Civil Aviation Authority (NCAA)

A meeting was held with the Director General of NCAA that also included representatives of Wind Systems Global, a private U.S. firm that submitted a proposal for the utilization of wind resources for powering selected operations at the country's airports. The proposal by Wind Systems Global included the development of 2-5 MW of wind power to offset the power requirements at 4 major airports in Nigeria including Lagos, Abuja, and Kano. Given potential safety issues associated with locating wind towers in the vicinity of airports, this proposal was not considered further.

5.8: Meeting with the Administrator of Nigeria Energy Regulatory Commission (NERC)

A meeting was held with the Administrator and senior management of NERC to discuss potential needs of NERC where USTDA could provide assistance. NERC proposed a number of specific areas where they need assistance including (i) the development of

market rules, (ii) compliance procedures by licensees, (iii) IPP/PPA models and review procedures, and (iv) feed-in tariffs for encouraging renewable energy based IPPs.

5.9: Meeting with John Ayodele, Executive Director, Power Holding Company of Nigeria (PHCN)

During this meeting, the Executive Director provided a detailed briefing to the DM on the current status of PHCN and the main power sector issues in Nigeria. Specifically, the following points were raised by the Executive Director during the meeting:

- The power sector reform process came to a halt, and for the last 18 months, the PHCN has been left hanging. The previous management of PHCN did not enact reform and was therefore relieved by the President. It also appears that PHCN may be reorganized or subsumed in another entity – the Electricity Service Management Company (ESMC) – a company created to provide common services to the power sector enterprises.
- The FY 2010 budget has allocated a substantial amount of funding for the ESMC to provide common services and manage PHCN and its staff. One of the main problems at PHCN is that 90-95% of the revenues from collections are spent in employee-related costs and needs, leaving little funding for maintenance, operations, and supply/service improvements.
- A global technical audit of the entire power sector is required to pinpoint areas of waste and inefficiency and develop targeted interventions.

While a global audit of the power sector is clearly needed, it was considered too broad for USTDA support and was not recommended by the DM.

5.10: Meeting with Joshua Mukan, Advisor to the Governor of Plateau State

A number of discussions were held with Mr. Mukan on the potential for small-scale hydropower projects in the Plateau State that has a large hydropower potential. These projects have been included in one of proposed grants to the Ministry of power. Mr. Mukan stressed that the Governor of the Plateau State, Hon. Jonah Jang is fully committed to supporting the project and providing all relevant information to the implementers of the feasibility study should it be funded by USTDA.

5.11: Meeting with John Cantrell, Coordinator, Nigeria Infrastructure Advisory Facility (NIAF), a DfID-funded Technical Assistance Project

Adam Smith International (ASI) of UK and CORE International of USA have been jointly supporting the power sector in Nigeria for the last two years. John Cantrell of ASI is the Power Sector Coordinator under the project. The DM wanted to make sure that it did not recommend any actions that might duplicate efforts under the ASI Technical Assistance. Accordingly, during the meeting, the

DM discussed a number of opportunities with ASI. ASI is currently providing assistance in a number of areas including (i) tariff development, (ii) gas pricing and availability issues, (iii) business planning support to the distribution companies, and (iv) a variety of specific support activities on key power sector issues.

ASI specifically mentioned a program called "Blueprint Distributor" under which they are providing support to the Ministry of Power on enhancing the capacity of commercial operations at three key distribution companies. The ASI assistance does not cover support to these distribution companies in the area of training in distribution management technology and ASI felt that any support in this area would complement the support provided by them.

Based on this, the DM has designed a potential grant to NAPTIN to develop and conduct training in distribution system management technology at the same three distribution companies for which the ASI team is providing business planning support under the "Blueprint Distributor" program.

ASI also suggested that USTDA may consider providing support for selected IPPs. While this was a good suggestion, it was not selected for possible USTDA support as USAID has an active \$12 million project – "Africa Infrastructure Program" under which it is providing IPP transaction support in a number of African countries.

5.12: Meeting with Waqar Haider, Senior Energy Specialist, The World Bank, Abuja, Nigeria

Mr. Haider provided a detailed briefing to the DM on the current strategy of the World Bank for supporting the power sector in Nigeria. Currently, the World Bank is providing funding for pilot solar village electrification projects under the National Energy Development Project. Because the development of rural electrification in Nigeria is fragmented, the Bank is planning a new project – Rural Electrification Development Project – that would include both grid-connected and off-grid system. The project is expected to be presented to the Board of the World Bank in January 2011. The project will be implemented at the state level based on specific eligibility criteria by which the states will be qualified to receive support under the project.

The DM discussed the various projects under consideration for potential USTDA support. Mr. Haider supported both the hydropower and wind power feasibility study projects in various states as they directly complement the bank's strategy for rural electrification at the state level.

5.13: Meeting and Site Visit with LADOL Integrated Logistics Enterprise (LiLE) Management, Lagos Nigeria

The DM held discussions with and visited the site of LiLE for logistics support to the shipping industry at the LADOL facility. LiLE has requested support for a feasibility study of a 10 MW power project utilizing waste and renewable energy resources as part of its logistics facility expansion program. LiLE hopes to expand its services in the areas of logistics support, fabrication wit heavy

machinery, a heliport facility, and a general services facility. All the major oil companies are very supportive of the LiLE expansion plans as they need the services provided by LiLE.

Based on an analysis of the proposed project, the DM has included this project as one of the six actions proposed for USTDAs consideration.

5.14: Meeting with the Management of the Multi-Trex Company and Cardinal Energy Solutions

Prior to meetings in Lagos with the management of the Multi-Trex Cocoa Company, the DM had a number of discussions with the management of Multi-Trex Investment and cardinal Energy Solutions on their proposal for developing a 3-5 MW power facility utilizing cocoa waste. During the meeting in the field, the DM discussed the expansion plans of the Multi-Trex Cocoa Company that included the company's plans to expand all of its product lines based on an increase in demand from Nestle and Cadbury, two of their primary clients. The availability of reliable power continues to pose a constraint to their expansion strategy. Therefore, the company has undertaken to develop its own power source rather than depend upon the unreliable grid power. Multi-Trex has pre-selected Cardinal Energy Solutions to conduct the feasibility study.

Based on an analysis of the project, the DM has recommended a potential grant for this feasibility study.

5.15: Roundtable with the American Business Council (ABC), Lagos, Nigeria

The embassy organized a roundtable with the American Business Council. The participants included representatives from General Electric, Bechtel, AES, Exxon-Mobil, and a number of other U.S. firms active in Nigeria. The participants discussed a number of key issues and offered specific suggestions to the DM that were very useful as the DM began to analyze various project requests. Specifically, the Council made the following suggestions:

- Cost of design/build projects in Nigeria is 30-40% higher than similar projects in the US. Hidden costs of doing business in Nigeria are significantly higher than in other countries. This requires that projects be evaluated very carefully with all risks and costs analyzed in detail.
- In general, the decentralized approach to developing projects at the state level may be more advisable as these projects are easier to manage and are less risky. Many of the state Governors are very progressive and are looking to encouraging U.S. technology deployment.
- The industry would like to see a level playing field and no price controls. Currently, these are two of the biggest constraints to new project development.

- The participants felt that new power plants should be sited in the Delta Region as they will be close to gas sources and the prospects for gas availability will be higher. This will also avoid the need for extensive investments in pipeline capacity but would require an expansion of the power transmission network.
- There was a unanimous feeling that the current prices regime poses great risks for power sector investments. The Council planned to have a dialogue with the Minister of Power on significant reforms in the power sector that are needed to encourage private investments.

The insights offered by the American Business Council were very useful in analyzing the various projects proposed to the DM.

5.16: Conference Call with Bi-Courtney, the Operator of Lagos Airport terminal II

Bi-Courtney currently operates the Lagos Airport under a concession with the Government of Nigeria. Bi-Courtney representatives discussed various issues associated with the growing aviation demand in the country and the congestion faced at the MMA, especially Terminal 1.

Terminal 1, the domestic terminal at the MMA needs to be doubled in capacity because of an increasing demand for domestic traffic. While some design work has been done, additional assistance is needed to develop the project. The design is almost 3 years old and needs to be updated and a financing plan is required. Bi-Courtney indicated that they will send a formal request to the DM for potential USTDA assistance with this project. The DM has been following up this project but as of writing of this report we have not received any information or data from Bi-Courtney. Most likely, the delay has been due to the dismissal of the Cabinet by the Acting President and the appointment of new ministers.

In addition to the above formal meetings, the DM held a number of informal meetings with various Nigerian businesses. These meetings did not result in any specific near-term opportunities for potential USTDA support.

6. List of Potential Opportunities for USTDA Assistance Identified during the Definitional Mission

Based on extensive discussions during the DM, CORE has identified the following potential opportunities for USTDA's potential support to Nigeria. These opportunities were analyzed in detail with respect to USTDA criteria for funding feasibility studies and technical assistance.

1. Feasibility of the Application of Wind Power Resources at Four Key Nigerian Airports – requested by the Nigerian Civil Aviation Authority
 2. Global Audit of Nigeria's Power Sector – suggested by the Executive Director of PHCN
 3. Support in the Development of Business Plan for an export-import business – requested by the Advisor to the Governor of Plateau State
 4. Technical and Financial Feasibility Study for the Development of Selected Hydropower Sites in the Plateau, Benue, and Nasarawa States in Nigeria – requested by the Ministry of Power
 5. Technical and Financial Feasibility Study for the Development of Selected Wind Power Projects in the Sokoto, Borno, and Kano States in Nigeria – requested by the Ministry of Power
 6. Technical and Financial Feasibility Study for a Biomass-Based Power Plant for the Multi-Trex Cocoa Facility in Nigeria – requested by the Multi-Trex Investment Limited
 7. Technical and Financial Feasibility Study for a Power Plant for the LADOL Integrated Logistics Enterprise in Nigeria – requested by the LiLE Enterprise in Lagos, Nigeria
 8. Technical Assistance to NERC for Developing a Tariff Framework for Small-Scale Renewable Energy IPPs in Nigeria – requested by NERC and endorsed by the Ministry of Power, Nigeria
 9. Power Distribution Operations Technology Needs Assessment and Capacity Building in Selected Distribution Companies in Nigeria – requested by NAPTIN, Abuja and endorsed by the Ministry of Power, Nigeria
- The DM reviewed these potential opportunities and selected six of these projects for potential grants by USTDA. These six projects meet all of USTDA's criteria as discussed in more detail in the DM Report. Detailed Terms of Reference (TORs) and budgets for these projects are provided in Annex II and Annex III respectively.

C. PROJECT SPONSORS' CAPABILITIES AND COMMITMENT

National Power Training Institute of Nigeria (NAPTIN), Abuja, Nigeria

The DM has recommended a grant to NAPTIN for power distribution operations technology needs assessment and capacity building in selected distribution companies in Nigeria. The Government of Nigeria has recognized the dire need for capacity building and training of power sector managers and engineers/technicians throughout Nigeria. The newly unbundled power companies are struggling as they lack both capacity and skills to provide reliable and acceptable quality electricity service to Nigerian consumers. Therefore, under funding from DfID of UK, the Ministry of Power developed a design for a national power sector training institute in Nigeria. In September 2009, the then Minister of Power, Lamé Babalola, formally established and launched NAPTIN as the lead power sector training entity in the country. In addition, the Government allocated a budget for setting up the initial operations of NAPTIN.

NAPTIN's CEO, Mr. Reuben Okeke, is the former manager of the Lagos Distribution Company and is an accomplished professional in the power sector in Nigeria. He and his staff have worked on numerous donor-funded programs in the past and fully familiar with the process required by donors. The DM discussed in detail the USTDA grant process with NAPTIN management and staff and they are committed to implementing the grant in accordance with USTDA requirements.

Given that NAPTIN is new it may also need technical assistance from USTDA to oversee the process of procurement and contractor selection.

The recommended activities fit well within the mandates of the potential grantees and were developed as a result of the needs identified by the respective grantees in terms of their priority and mandate. Finally, the DM Team is convinced that the project sponsors are fully committed to the projects recommended as part of the DM report for USTDA assistance.

D. IMPLEMENTATION FINANCING

1. Sources of Financing for the Recommended Projects

The following provides a discussion of the potential sources of financing for the hydropower, wind power, and biomass-to-power projects that may result from the recommended USTDA assistance:

- **Equity and Debt Financing from International Finance Institutions (IFIs):** The World Bank and the African Development Bank are two the most active IFIs in Nigeria. Some of the infrastructure components of the hydropower, wind power, and biomass-to-energy projects could be financed under the Rural Electrification Development Project (REDP) being prepared by the World Bank. This project is similar to the REDP Project in Sri Lanka that proved to be remarkably successful. In addition,

the International Finance Corporation, the private sector arm of the World Bank Group, typically offers both equity investments and financial syndicating services that could be available for specific projects recommended as part of the DM.

- **Bilateral Donor Agencies:** While most bilateral agencies do not finance major projects, they can make an important difference at the early stages of the project as well as during project implementation. In addition, there is a general trend among some of the bilateral donors to finance small-scale hydropower and renewable energy projects. Typically, bilateral agencies could provide funding for technical assistance and training that strengthen the project viability and also attract investors and lenders. The Ministry of Power has ongoing relationship with a number of bilateral donors that could be tapped for funding specific pieces of selected hydropower and wind power projects found to be feasible under two of the proposed grants.
- **The U.S. Export-Import Bank:** The Export-Import Bank of the United States (Ex-Im Bank) provides direct loans to foreign buyers with competitive, fixed-rate financing for their purchases from the United States. The Ex-Im Bank also provides working capital guarantees to cover 90% of the principal and interest on commercial loans to creditworthy small and medium-sized companies that need funds to buy or produce U.S. goods or services for export. For project financing, long-term Ex-Im Bank guarantees of commercial loans are available for major projects, large capital goods acquisitions, and project-related services. Given the competitiveness of U.S. industry in the power sector, U.S. industry would be interested in developing hydropower projects. Therefore, U.S. Export-Import Bank financing will be another channel for financing attractive power projects and distribution technologies.
- **The Overseas Private Investment Corporation (OPIC):** OPIC, an agency of the U.S. Government, provides project financing through direct loans and loan guarantees that provide medium- to long-term funding for ventures involving significant equity or management participation by U.S. businesses. Since project financing looks for repayment from cash flows generated by projects, OPIC carefully analyzes the economic, technical, marketing and financial soundness of each project. At the appropriate time during the structuring of the various power projects included as part of the proposed grants, this source of financing should also be explored by the Ministry of Power and the various state governments in Nigeria.
- **The Multilateral Investment Guarantee Agency (MIGA):** MIGA and OPIC both provide political risk insurance for U.S. exporters involved in international transactions. OPIC insurance is available for investments in new ventures or expansions of existing enterprises and can cover assigned inventory or equipment, exporters' and contractors' exposures, and advance payment and other guarantees posted in favor of foreign buyers. MIGA programs are designed to encourage foreign investment by filling gaps in investment insurance against non-commercial risks in developing countries.

- **Equity and Debt Financing from the Capital Markets:** Depending upon the reform framework to be implemented by the Nigerian Government and the rationalization of tariffs, a number of proposed power projects could be attractive to IPPs and investment banks. On a case-by-case basis, certain components of individual projects could be eligible for commercial financing, especially if other components of the projects are able to generate concessional financing and if the Government is prepared to guarantee some parts of the various projects.

Given the worldwide history of financing patterns for financing small scale hydropower and renewable energy based power projects and the Government's professed commitment to developing this sector, financing for the projects is not considered to be a major problem if the projects are found to be feasible and the Government takes an active role in mitigating project risks.

Estimated Financing Requirements for the Recommended Projects

Power Distribution Operations Technology Needs Assessment and Capacity Building in Selected Distribution Companies in Nigeria

The Ministry of Power is committed to improving and modernizing the country's distribution sector. The Government has committed N700 million as part of the 2009-2010 appropriations. In addition, N1.5 billion could be available from the intervention fund. The Government has also allocated an additional N433 million as part of the 2010-2011 appropriations for capital expenditures. These funds are slated for the modernization of the distribution sector as well as capacity building and training of Nigeria's power sector managers and technicians.

Given the potential benefits from distribution reform and upgrade and the commitment by the Government to improve the quality of supply and service, financing for distribution technology upgrade projects is not expected to be a problem.

International Financing Facilities Especially Suitable for the Recommended Projects in Nigeria

The projects resulting from the feasibility study and technical assistance recommended for Nigeria have the following characteristics:

- All of the projects are clean energy projects and are therefore eligible for specialized financing by various international organizations.
- All of the projects are in the small range (5-20 MW facilities) as opposed to larger projects such as coal-fired power stations.
- In addition, some of the projects would need imports of distribution management IT systems and software.

Key international financial institutions active in Nigeria include the World Bank, African Development Bank, and the International Finance Corporation. All of them have special facilities for financing small-scale clean energy projects. A brief description of the types of financing that would likely be available for projects resulting from the proposed grants is provided below.

1. African Development Bank – Financing Energy Services for Small-Scale Energy Users (FINESSE)

The African Development Bank (ADB) Financing Energy Services for Small-Scale Energy Users (FINESSE) Africa program was conceived to assist countries in Africa, working through the Bank, to formulate appropriate policy and regulatory frameworks and to develop capacity to generate a pipeline of investment projects in renewable energy and energy efficiency.

Program

Assist countries in Africa, working through the Bank, to formulate the appropriate policy and regulatory frameworks and develop capacity to generate a pipeline of investment projects in renewable energy and energy efficiency.

Program Objectives

- Increase capacity of African Development Bank staff to deal with alternative energy.
- Establish African countries' ownership and commitment to alternative energy programs.
- Operationalize renewable energy and energy efficiency in African Development Bank's projects and programs.
- Identify and develop alternative energy components to be included in the Bank's lending portfolio.
- Increased economic and employment opportunities.

Development Objectives

Reduce poverty through

- Increased access to modern energy services, especially to rural inhabitants.
- Improved energy and electricity services for all sectors.
- Greater access to clean water supply
- Reduction of exposure to ambient air emissions from fuel combustion.

2. International Finance Corporation – Sustainable Energy Market Development

Grid-connected Renewable Energy

Historically, the private sector has expressed limited interest in grid-connected renewable energy due to underpriced/competing power generation technologies, high initial capital costs, limited capacity to develop projects, financing constraints and regulatory barriers. As countries begin to adopt favorable regulatory frameworks to incentivize the private sector to invest in renewable energy,

IFC has stepped in to catalyze investment. IFC has a rapidly growing portfolio of solar, wind, hydro and geothermal advisory projects where IFC advises organizations on identifying opportunities in grid-connected renewable energy and on designing and managing projects. IFC also provides commercial and concessional financing, where appropriate.

Off-grid Renewable Energy

A number of market barriers have prevented successful commercial off-grid electrification. To unlock this potential, IFC provides services to assure product quality and build capacity for project developers and investors, and provides financing. Projects include:

- Lighting Africa, which focuses on creating a sustainable commercial market for off-grid lighting in Africa.
- Portfolio Approach to Distributed Generation Opportunities (PADGO) focusing on financing off-grid replicable renewable energy projects. Currently IFC is funding a project in Sri Lanka, which supports the scale-up for renewable distributed energy generation. This project is very similar to the types of small wind and hydropower projects that Nigeria plans to implement throughout the country and for which the DM has proposed two grants to the Ministry of Power.

Utility efficiency

In developing countries, as much as 20%-55% of energy is lost between the point of generation and point of consumption. These losses undermine energy access for the underserved and represent significant financial losses and greenhouse gas emissions. Opportunities exist to reduce these losses through new and lower cost network analysis tools and smart meters. IFC is developing an advisory service offering to reduce these losses, through a combination of energy audits, loss reduction programs, regulatory support and commercial financing.

IFC's international team of energy experts and our sustainable energy practice group play a critical role in scaling up sustainable energy projects, identifying opportunities, distilling lessons from past experiences, and developing and implementing programs and projects. This facility could be very useful for NAPTIN to request financing for specific distribution efficiency projects that would come out of the grant that the DM has proposed for NAPTIN involving three major distribution companies in Nigeria.

3. World Bank – Energy Sector Management Assistance Program (ESMAP) – DfID – Small and Medium Enterprise Program

ESMAP's mandate has evolved over time to meet the changing needs of its clients. ESMAP has operated in over 100 countries through over 500 activities covering a broad range of energy issues. Early on, these activities were almost exclusively Country Energy Assessments that served to fill the knowledge gap on the energy situation in a specific country, and provide options to address priority energy issues in an environment of rapidly rising energy prices.

Today, ESMAP is positioned on two points in the policy and project cycle: (1) upstream (pre-investment) on issues that have clear

potential for key policy formulation and energy investment, and (2) downstream (ex post) through the evaluation and distillation of emerging best practice, followed by aggressive dissemination to promote knowledge transfer. ESMAP's product line contributes to the global pool of knowledge about the delivery of modern energy services by funding activities that involve policies, mechanisms and approaches not yet mainstreamed in the operations of developing country governments, bilateral or multilateral development institutions, or in the private sector.

The UK Department for International Development (DFID) has funded a program by the Energy Sector Management Assistance Program (ESMAP) to help the local private sector provide energy services to the underserved and unserved in the developing world. The ESMAP Energy SME Program, through a grant from DFID, supports governments to engage small and medium enterprises (SME) in providing access to sustainable and affordable energy services in small towns, peri-urban and rural areas. The program features 13 energy projects in 12 countries and one regional program in Africa.

In addition, the ESMAP program works very closely with various financing windows in the World Bank to secure loans for attractive public and private sector projects in partnership with the public sector through carefully designed PPP schemes.

This type of financing could be very useful for all of the projects that would come out of the various grants proposed as part of this DM.

E. U.S. EXPORT POTENTIAL

1. Potential Investment Requirements and Exports

Project 6: Power Distribution Operations Technology Needs Assessment and Capacity Building in Selected Distribution Companies in Nigeria	\$ 100-150 Million			
Total Proposed Grant: \$615,550.00				
Type of Equipment and Services <ul style="list-style-type: none">• GIS Systems• SCADA Systems• ERP and Outage Management Systems	<table><tr><td>\$10-15 Million</td></tr><tr><td>\$20-30 Million</td></tr><tr><td>\$10-15 Million</td></tr></table>	\$10-15 Million	\$20-30 Million	\$10-15 Million
\$10-15 Million				
\$20-30 Million				
\$10-15 Million				

<ul style="list-style-type: none"> • Metering, Billing and Collections systems • Software Integration Bus and Related Technology • Control Systems • Software Installation Services, Training, and Ancillary Equipment 	\$10-15 Million \$10-15 Million
	\$10-15 Million \$30-45 Million
TOTAL ANTICIPATED INVESTMENT	\$100-150 MILLION

Note: These estimates are based on (i) the number of distribution IT systems to be determined by the feasibility study and (ii) order of magnitude estimates from information published by the industry. There are 13 distribution companies in Nigeria all of which require comprehensive IT and SCADA systems in order to improve the quality of supply and service to the consumers, a key priority of the Government of Nigeria

Nigeria does not produce any of the technology, equipment and software needed for the implementation of the project. Nor does the country have skilled work force in modern distribution IT systems. Therefore, virtually all of the equipment, software, and services will need to be imported, putting the overall export potential around \$100-150 million. Conservatively speaking, the U.S. share of the export potential could be as much as 80 percent of the total or around \$80-120 million, mostly in software systems, installation, maintenance contracts, and training.

In addition, this grant will have wide ranging capacity building and development impacts in Nigeria's power sector.

TOTAL POTENTIAL INVESTMENT IN PROPOSED PROJECTS	\$234-310 MILLION

On an overall basis, total investment resulting from the proposed is expected to be approximately \$234 – 310 million over the next 5 to 10 years as the various proposed grantees proceed to implement the projects.

The implementation of the proposed projects would require Nigerian grantees and project implementers to import a wide variety of technology, equipment, and systems in the following areas:

- Hydropower
- Wind Power
- Biomass-to-Electricity
- Power Distribution Management and Upgrade

U.S. industry has an excellent track record for designing and building hydropower, wind power and biomass-to-electricity projects both in the U.S. and around the world. However, the U.S. companies will face stiff competition in Nigeria from British, Dutch, Scandinavian, Korean, and Chinese firms. Firms from these countries have been involved in Nigeria for decades and have a strong position in the market. While U.S. suppliers may not be very competitive in some of the basic hardware and equipment in the hydropower sector, they will be extremely competitive in the area of wind power, biomass-to-energy, and power distribution IT systems.

Many of the senior power sector officials in the Government and in the 18 power companies created as a result of unbundling of the power sector are very familiar with the capability of U.S. suppliers of the technology and equipment needed for the proposed projects. The DM observed a considerable amount of equipment, specifically, heavy equipment at the LADOL facility, control systems at power distribution utilities, and turbines and boilers that were imported from the U.S. and U.S. manufacturing facilities overseas. However, given the considerable presence of French and British firms in the region, U.S. firms will face stiff competition from firms in these countries that have long-standing relationships with Nigeria. Accordingly, U.S. firms definitely need U.S. Government support to conduct business in this region.

2. List of Selected U.S. Manufacturers and Suppliers of Equipment and Technology Related to the Proposed Projects

Project 6: Power Distribution Operations Technology Needs Assessment and Capacity Building in Selected Distribution Companies in Nigeria

Asset Management Systems (AMS)	• Honeywell
Customer Information Systems (CIS)	• Oracle
Geographical Information Systems (GIS)	• General Electric Company
Supervisory Control and Data Acquisition (SCADA) Systems	• Utility IT Solutions
Distribution Management Systems (DMS)	• CGI Pragma
Power Systems Analysis Tools (PSAT)	• Siemens, USA
Financial Management Systems (FMS)	• Ventyx
Outage Management Systems (OMS)	• IBM
Enterprise Resource Planning (ERP) Systems	• UISOL
Customer Relations Management (CRM)	• Jacobs Engineering
Systems	• KEMA
IT Integration and Service Oriented Architecture (SOA) Systems	• RMS Integration
Planning System and Analysis Tools (PSAT)	• Newton-Evans Research
A variety of network control and operations software	• Onyx Software, Inc.
Consulting Services in Distribution Management and Planning	• Micro Encoder, Inc.
	• Alstom ESCA Corporation
	• Harris Corporation
	• Delta Technologies Group

Note: The IT industry in the US is very fragmented. There are over 2,000 small, medium, and large IT systems company that manufacture and develop software systems for application in power distribution management in the utility industry.

F. FOREIGN COMPETITION AND MARKET ENTRY ISSUES

Despite its technology superiority in the hydropower sector, wind power, biomass-to-energy systems, and power distribution management, U.S. industry faces considerable foreign competition throughout the world from European and Pacific Rim companies, especially Chinese firms.

In the hydropower sector, U.S. companies have been very competitive. However, they will face competition from firms from Scandinavian countries, China, and EDF of France. EDF has had strong linkages in Nigeria for several decades. Also for other reasons, European firms have had a greater access to the developments in Nigeria than U.S. firms. Thus, U.S. firms would definitely face some competition from European firms.

Perhaps the greatest competition to U.S. firms will come from Chinese firms. During the mission, it became clear that Chinese firms supported by the Chinese government were very active in Nigeria. Many of the Chinese firms' offers do not materialize and the countries in Africa are now looking at Chinese proposals for hydropower plants more carefully. They are also recognizing that in many cases the Chinese proposals include reconstructed equipment and systems that on the surface offer a better value and cost advantage but lack long-term sustainability.

In the wind power sector, GE is the leader in the U.S. Recently, the top management of GE was in Nigeria expressing GE's strong interest in Nigeria's power sector across the full array of GE equipment and services including wind power. While we cannot confirm, GE's profits for wind power projects and other renewable energy systems and technologies exceeded a billion dollars in 2009. However, GE is very aware of the stiff competition that it faces from Vestas and Suzlon in wind power sector.

The U.S. is world leader in the biomass-to-power sector and U.S. industry has built over 800 biomass-to-energy systems worldwide. Therefore, U.S. industry will be very competitive in this sector. It does, however, face stiff competition from German and Scandinavian firms, especially Ogdens-Martin, a worldwide leader in waste-to-energy technologies.

From other work that CORE has done in the Nigeria, our analysis indicates that U.S. firms will have an uphill battle in competing for power projects in Nigeria. At the same time, the demand for new power projects in Nigeria is growing rapidly. The overall size of the market is very attractive despite the market barriers that U.S. companies face. Therefore, on the whole, our recommendation is for USTDA and other USG agencies to increase their engagement with U.S. firms to penetrate the growing power market in Nigeria.

G. DEVELOPMENTAL IMPACT

1. Anticipated Development Impacts from the Proposed Projects

As part of this DM, CORE International is recommending six power projects. Virtually, all of these projects will have significant development impacts in terms of new job creation and building the capacity and skills of Nigerian power sector managers and technicians.

The following types of development impacts are expected as a result of the implementation of these projects if they are found to be feasible and adequate financing is engineered:

- **Macroeconomic Impacts**
These types of impact include overall economic impacts such as GDP growth, inflationary impacts, trade impacts, and other fiscal impacts
- **Microeconomic Impacts**
Employment, income, income distribution, new industries development, etc.
- **Social Development Impacts**
Population movements, development of new communities, capacity building and skills improvement, greater social opportunities, etc.
- **Technology Transfer Impacts**
Application of new technology in the old and antiquated power sector in Nigeria

Exhibit IV summarizes the anticipated development impacts of the proposed projects if they are implemented by the prospective grantees. These likely impacts are categorized in accordance with USTDA guidelines. The scopes of work prepared for the proposed feasibility studies and the technical assistance as part of this DM include a task on estimating development impacts in accordance with the specific guidelines provided by the USTDA.

2. Approaches to Tracking Development Impacts

Measuring development impacts of infrastructure projects requires the collection of key economic and social data and information over a number of years after the projects are implemented. While some impacts such as number of jobs created, the increase in GDP, additional revenues generated, and other economic parameters can be measured with relative ease, other development impacts, especially social impacts are difficult to quantify. However, social development impacts can be measured through surveys of communities and population groups directly impacted by the projects. The following options are available to USTDA to ensure that the development impacts of activities funded by USTDA are measured over time:

1. Ensuring that there is a specific clause in the USTDA grants that places the responsibility of tracking and reporting specific development impacts on the grantees. Most grantees will generally resist this additional burden as they are already capacity constrained and have a shortage of qualified personnel. In some cases, the grantees may accept such requirements, but may be unable to comply with them. Therefore, while a theoretical option, the experience of other donors who have tried this (e.g., SIDA, Sweden and DfID, UK) has been that this approach generally delivers little results.
2. Another option is for U.S. contractors performing the feasibility studies funded under USTDA grants to track and report any development impacts of USTDA grants for a specified period beyond the completion of the contract (Technical Assistance or Feasibility Study), say two years. All scopes of work developed by DM contractors for any USTDA grant include a mandatory task on estimating development impacts from USTDA projects. This DM does not have a direct knowledge of how this process is working.
3. Another possible option for USTDA may be to have a separate instrument devoted entirely to tracking and reporting on development impacts of projects funded under USTDA grants. While USTDA is engaged in the process through both internal staff and an outside contractor, this effort may need to be expanded. Given the total number of actions funded by USTDA on an annual basis, an exercise to measure development impacts from all actions may simply not be feasible. Accordingly, some type of grouping may be desirable to extract and document the most visible and important development impacts from a selected set of USTDA actions.

<i>Proposed USTDA Grant Activity</i>	<i>Type of Impact</i>	<i>Description of the Impact</i>
Power Distribution Operations	<i>Infrastructure</i>	This project is designed to introduce a wide variety of IT

Technology Needs Assessment and Capacity Building in Selected Distribution Companies in Nigeria	Related Impact <i>Market-Oriented Reform</i>	<p>systems for sound distribution management aimed at improving the quality of supply and service in Nigeria's power sector. Accordingly, it will not have any direct infrastructure impacts.</p> <p>No direct market-oriented impacts are expected from the project except for a wide-scale application of proven IT systems in Nigeria's power distribution sector.</p>
	<i>Human Capacity Building</i>	<p>There will be considerable human capacity building impact as a result of this project. U.S. contractor personnel will be working side by side with the experts from the Nigerian power distribution utilities. Thus, there will be direct capacity building of the Nigerian personnel in various technical and management areas related to power distribution.</p>
	<i>Technology Transfer and Productivity Enhancement</i>	<p>This project is likely to result in significant technology transfer in a number of areas including a large number IT systems for improving the full chain of business processing in power distribution ranging from network control and management to financial management and customer service.</p>
	<i>Other</i>	<p>No direct impacts are expected as a result of this project.</p>

H. IMPACT ON THE ENVIRONMENT
This project will result in the installation of a wide variety of IT systems at the country's 13 power distribution utilities and the provision of training to a number of personnel in three distribution companies. Therefore, no environmental impacts are expected as a result of the implementation of this project.

I. IMPACT ON U.S. LABOR

No U.S. jobs will be relocated as a result of USTDA providing any financial assistance to Nigeria. In fact, as projects funded by USTDA come to fruition, they will require potential imports of technology and equipment, most of which is manufactured by U.S. firms in facilities located in the U.S. Therefore, with this increase in demand for U.S. exports, these projects are expected to have a net positive impact on U.S. employment. Also, no relocation of U.S. jobs is expected as a result of USTDA providing funding for any of the proposed projects.

J. QUALIFICATIONS

This project will focus on assisting NAPTIN in the assessing of the feasibility of IT applications in three selected distribution companies and in the provision of targeted training in IT systems to upgrade the performance of these utilities. The selected Contractor shall demonstrate the following qualifications prior to selection:

1. Experience of the firm in distribution Management IT systems 25%
2. International experience of the firm in prior similar power projects 15%
3. Experience of the firm in similar projects in Africa 5%
4. Experience of the Proposed Experts 25%
5. Technical approach of the firm for developing the project 20%
6. Approach for economic analysis and financing of IT systems in distribution utilities 10%

K. JUSTIFICATION

The proposed grant will conduct a feasibility study for the application of a wide variety of IT systems and technology to improve the power distribution sector performance in Nigeria. This project is consistent with one of the top priorities of the Government of Nigeria

- improving the quality of supply and service to the country's consumers. CORE International's justification for recommending this grant is as follows:

1. This study does not duplicate any activities currently underway or planned in the near future by any of the key donor agencies and donors — the French Government, the U.K. Government, the World Bank, African Development Bank, and others. In fact, the proposed study will address a major need of the consumers and will have significant positive impacts in terms of reducing social and economic disruptions associated with the provision of poor quality of power in many countries.
2. The proposed study will significantly add to the potential demonstration of proven IT systems to improve the efficiency of power distribution to the Nigerian industry that will not only have economic and commercial benefits in Nigeria but also increase the country's energy security. It is estimated that widespread deployment of modern distribution technologies in Nigeria could reduce losses by as much as 7 percent in addition to improving the performance and competitiveness of the industry as a result of reliable power. In addition, the project may result in avoidance of the incidence of diesel-based captive power generation, an enormous economic cost to Nigeria.
3. The proposed study will improve both the competitiveness of Nigerian industry but also enhance customer satisfaction. In addition, it will reduce the operations costs of the distribution companies, thereby moving them closer to financial sustainability.
4. Funding the proposed study will open a large power market to the U.S. industry in a sector where the U.S. industry has a well-documented track record of success.
5. The proposed project, even if implemented in phases, will open new market opportunities for a host of U.S. suppliers of various types of IT systems and distribution management technology as discussed earlier in the report. U.S. firms have not done well in this sector in Nigeria. Therefore, this study offers an opportunity for market entry by interested U.S. firms.
6. Even if a part of the overall project is implemented it would lead to positive economic and developmental impacts in Nigeria, one of the poorest countries in Africa. New investment projects will create both employment in Nigeria in the near term and opportunities for exports for U.S. manufacturers in the longer term.
7. With increased opportunities for U.S. exports over time, the net impact on U.S. employment will be positive, as most of the technology required for the project to be implemented subsequently is developed in facilities located within the United States.

8. U.S. industry is not well placed in the Nigerian market despite attractive opportunities for the export of U.S. technology and equipment as Nigeria develops and builds new infrastructure. The proposed activity is, therefore, an important step to assist the U.S. industry in approaching this market.

See RFP ANNEX V

L. TERMS OF REFERENCE

**M. STUDY BUDGET
LIST OF CONTACTS**

Annex I provides the list of contacts as well as a detailed meeting schedule during the field mission to Abuja and Lagos in Nigeria.

ANNEX I: SCHEDULE OF MEETINGS IN NIGERIA

Mr. Nathan Gazzetta, Country Manager, Sub-Saharan Africa Region
U. S. Trade and Development Agency +1-703-875-4357

Jason Nagy, Africa Business Development Manager
U.S. Trade & Development Agency +27 (11) 290-3084
U.S. Consulate General -- Johannesburg

Mr. Vinod Shrivastava, CEO
CORE International, Inc., Definitiional Mission Consultant +1-202-465-6357

Friday, Feb. 5, 2010 **Nathan Gazzetta**
VK #55

- Depart Lagos 630P Need Expediter and Motorpool
- Arrive Abuja 750P Need Expediter and Motorpool to Hilton

Saturday, Feb. 6, 2010 **Vinod Shrivastava, CORE International (DM Consultant)**
Kenya Airways Flt. 532

- Depart Nairobi 07:30 am
- Arrive Lagos 10:35 am
Need Expediter and Motorpool to take Vinod to Lagos Domestic Terminal from the International Terminal

VK #49

- Depart Lagos 02:30 pm Need Expediter and Motorpool to Hilton
- Arrive Abuja 03:50 pm Need Expediter and Motorpool to Hilton

Sunday, Feb. 7, 2010 **Nathan Gazzetta**

- C** 07:30 am Motorpool pick up at Hilton
- Fantsuam Foundation, Kafanchan, Kaduna State (John Dada 0806-530-2297)

- Vinod Shrivastava**
- C 11:00 am Meeting with Carolyn Jensen to Discuss Agenda - Hilton
- South African Airways Flt. 60**
- Arrive Lagos 4:45 am
 - International Terminal
- Need Expediter and Motorpool to take Jason to Lagos Domestic Terminal from the International Terminal
- VK# 43
- Depart Lagos 8:15 am
 - Arrive Abuja 9:35 am
- Need Expediter
Need Expediter and Motorpool to Hilton
- Monday, Feb. 8, 2010**
- C 09:00 am Meeting with the Director of Power, Mr. Sanusi Garba
- Federal Secretariat Phase I
Block 4B, Floor 5, Room 332
- C 10:30 am Meeting with Tri City Oil - Nigerian Reps for Syn Fuels GTL technology
- Salamander Café
Dr. Obiora (Obi) Onowu (0807 504 5561)
Dr. Iheayi Uwanamodo (0806 501 5504)
- C 11:30 am Meeting with Mr. Reuben Okeke, CEO, National Power Training Institute of Nigeria (NAPTIN)
- rokeke@yahoo.com - 0805 800 7538
Eldoret Close off Amino Kano Crescent
Between Wakkis and Federal Roads Maintenance Agency (FERMA)
Wuse II
- C 03:00 pm Meeting with Dr. Emmanuel Egbozah, Special Adviser to the President on Petroleum Matters. He will want to discuss gas-to-liquids with Nathan.
- NNPC Towers Block D, 5th Floor
Herbert Macaulay Way
Central Business District
Abuja, FCT

- C 05:00 pm Meeting with Director, Renewable Energy for the Ministry of Power Engr Olapada**
Federal Secretariat Phase I
Block 4B, Floor 5, Room 330
- Tuesday, Feb. 9, 2010**
- C 10:00 Energy Entrepreneur Program with IPPAN & others**
Embassy Conference Room
Plot 1075 Diplomatic Drive - Near Ship House
Central Business District
- C Noon Meeting with the Minister of State for Petroleum Resources Odein Ajumogobia** with stakeholders (includes IOCs and 3rd party) on the status of Gas to Liquids project(s)
NNPC Towers, Block D, Floor 11
Minister's conference room
- C 02:00 pm Meeting with the Minister of Aviation Babatunde Omotoba** to discuss a possible wind/solar project for Nigeria's airports to reduce dependence on diesel fuel as well as other aviation related business development currently planned by the Ministry.--Policy meeting.
The Honorable Babatunde Omotoba,
Minister of Aviation
Federal Ministry of Aviation
Federal Secretariat Complex, Annex III
Shehu Shagari Way, Abuja
- C 04:00 pm Meeting with Nigerian Civil Aviation Authority (NCAA) DG Dr. Harold Demuren.--Operations and detail meeting.**
NCAA Offices
Abuja Nnamdi Azikiwe International Airport
- Wednesday, Feb. 10, 2010**

- C **10:00 am Meeting with the Administrator of Nigeria Electricity Regulatory Commission (NERC)** Mr. Imamudeen Talba -
Contact: Dr. Usman (0803-314-1578)
Adamawa Plaza, Plot 1099
First Avenue Off Shehu Shagari Way
Central Business District
- C **11:30 am Meeting with Ministry of Mines and Steele** (Contact: Mr. Linus Adie, Project Coordinator of Sustainable Management of Mineral Resources Project)
- C **Meeting with the Management of Power Holding Company of Nigeria**
Mr. John Ayodele, Executive Director (Operations)
- C **05:30 pm World Bank meeting with Waqar Haider, Sr. Energy Specialist**
(0803-246-7971)
Nigeria Country Office
Plot 102, Yakubu Gowon Crescent
Asokoro District
- C **08:00 pm AgroPro CEO Ejiofor A. Ezekwe will meet with Jason Nagy at the Hilton** (0803 319 5905)
- Thursday, Feb. 11, 2010
- C **11:00 am Meeting with the State Minister of Power, Minister Wya**
Hon State Minister of Power
Federal Ministry of Power
Federal Secretariat Phase I
Block 5B, Floor 5, Room 515
- C **01:00 pm Meeting with Nigeria Infrastructure Advisory Facility John Cantrill** (A DFID-funded program implemented by Adam Smith International)
49B Agadez Street, Off Amino Kano Crescent, Wuse II, Abuja
Office Telephone (0) 9-870-3499
Nigeria Mobile (0) 813-474-1137
UK Mobile +44 7748 056 228

VK # 54

Jason Nagy

- Depart Abuja 7:20 pm Need Expediter and Motorpool pick-up at Hilton
- Arrive Lagos 8:35 pm Need Expediter and Motorpool to take Jason to Lagos Domestic Terminal from the International Terminal

South African Airways Flt. 61

- Depart Lagos 11:00:00 pm for Johannesburg Need Expediter

Friday, Feb. 12, 2010

C Meeting with Director for Information Technology for the Central Bank of Nigeria Timothy Akeke. -Ajinbola Akeju Site Officer

Saturday, Feb. 13, 2010

Vinod Shrivastava

VK #44

- Depart Abuja 11:20 am- Need Expediter and Motorpool
- Arrive Lagos 12:35 pm - Need Expediter and Motorpool to GQ

Nathan Gazzetta

UA#9101

- Depart Abuja for Frankfurt 11:35 pm - Need Expediter and Motorpool.

Sunday, Feb. 14, 2010 Vinod Shrivastava

Planning for Meetings in Lagos

Monday, Feb. 15, 2010 Vinod Shrivastava

C Meeting with Multi-Trex Company/ Cardinal Energy Solutions at GQ, Lagos

- Discussions on the 5 MW Biomass Plant (Note: Nathan and I have met the people from Cardinal Energy who have submitted a proposal and will arrange this meeting, about 30 minutes drive from Lagos
 - Bimbo Adisa, President & CEO, Cardinal Energy Solutions
 - 773 875 2028, badisa@cesafrica.com

- Mr. Dimeji Owofemi Executive Vice Chairman (dimejiowofemi@multi-trex.org, dimejiowofemi@yahoo.com)
- Dr Teju Bogunjoko Company's Engineering Consultant (ruchimltd@yahoo.com)
- Mr Yusif Isiaka Factory General Manager (yusufisiaka@multi-trex.org)

Tuesday, Feb. 16, 2010 Vinod Shrivastava

C 0900 American Business Council - Power Entrepreneur Forum at GQ, Lagos

Contact: Adekunle A Olumide [aaolumide2005@yahoo.com]

C Meeting with the Management of LADOL Integrated Logistics Enterprise

Wednesday, Feb. 17, 2010 Vinod Shrivastava

VK #49

- Depart Lagos 02:30 pm Need Expediter and Motorpool
- Arrive Abuja 03:50 pm Need Expediter and Motorpool to Palace

C 05:30 pm Out-Brief Meeting with Deputy Chief of Mission Dundas McCullough and Economic Counselor Perry Ball.

Lufthansa #563

Depart for Frankfurt at 11:25 pm

Need Expediter and Motorpool.

POWER DISTRIBUTION OPERATIONS TECHNOLOGY NEEDS ASSESSMENT AND CAPACITY BUILDING IN SELECTED DISTRIBUTION COMPANIES IN NIGERIA

TERMS OF REFERENCE

1. Power Sector Background in Nigeria

Nigeria has considerable energy resources throughout the country. It has proven reserves of nearly 180 trillion cubic feet of gas. Coal and lignite reserves are estimated to be 2.7 billion tons, while tar sand reserves represent 31 billion barrels of oil equivalent. Nigeria also has considerable hydropower resources. Based on past work done by UNIDO and the World Bank, it is estimated that Nigeria has an estimated hydropower capacity of about 14,250 MW. Nigeria has significant biomass resources to meet both traditional and modern energy uses, including electricity generation. The country is exposed to a high solar radiation level with an

annual average of 3.5 – 7.0kWh/m²/day. Wind mapping of various areas in the country indicates that Nigeria also has reasonable level of wind resources for power generation.

The current installed capacity of grid electricity in Nigeria is around 6000 MW, of which about 67 percent is thermal and the balance is hydro-based. Between 1990 and 1999, there was no new power plant built and the same period witnessed substantial government under-funding of the utility for both capital projects and routine maintenance operations. As a result, the generating plant availability is low and the transmission and distribution networks are over stressed.

The transmission network in the country consists of about 5000 km of 330 kV lines, and 6000 km of 132 kV lines. The 330 kV lines feed 23 substations of 330/132 kV rating with a combined capacity of 6,000 MVA or 4,600 MVA at a utilization factor of 80%. In turn, the 132 kV lines feed 91 substations of 132/33 kV rating with a combined capacity of 7,800 MVA or 5,800 MVA at a utilization factor of 75%. The transmission network is overloaded with a wheeling capacity of less than 4,000 MW. It has a poor voltage profile in most parts of the network, especially in the North. The main problems associated with Nigeria's transmission network include inadequate dispatch and control infrastructure, radial and fragile grid network, frequent system collapse, and exceedingly high transmission losses.

The distribution grid in the country consists of 23,753 km of 33 kV lines and 19,226 km of 11 kV lines. These lines feed 679 substations of 33/11kV rating and 20,543 substations of 33/0.415 and 11/0.415 kV ratings. In addition, there are 1,790 distribution transformers and 680 injection transformers. The Power Holding Company of Nigeria's (PHCN) business operations are inefficient. The system suffers from chronic under-investment, poor maintenance, un-recorded connections and under-billing arising from a preponderance of un-metered connections. The utility's financial performance, as well as its ability to serve customers satisfactorily has been consistently poor.

Given the shortage of electricity, the Government has undertaken comprehensive reforms to address the electricity situation in the country. The enactment of the Electricity Power Sector Reform Act (2005), establishment of the Nigerian Electricity Regulatory Commission (NERC), the unbundling of the power sector, and the establishment of PHCN as a transition company to oversee reform are concrete legal, regulatory and institutional steps that have paved the way to address the challenges of the sector. In addition, a National Integrated Power Project (NIPP) has been established by the Government that targets a cumulative capacity of over 10,000 MW by the end of 2010, and expansion of transmission lines to over 15,000 km from about 11,000km. The capacity of available transformers is also expected to be doubled from 10,444MVA to 22,414MVA under the NIPP.

Despite these efforts, the reform has been very slow and the Nigerian power sector continues to face all of the common problems associated with electricity sectors in various developing countries. These include (i) old and dilapidated power plants and transmission and distribution networks, (ii) poor system maintenance and virtual absence of preventive maintenance, (iii) poor

financial performance of the enterprises and a lack of investment funds, (iv) poor institutional capacity and outdated skills of utility engineers and technicians, (v) unreliable power supply and service with frequent and long power cuts and interruptions, (vi) high technical and non-technical losses, and (vii) rampant corruption.

The Government has also been working with several donors to address the sector problems. The most notable assistance is being provided under a major project – Nigeria Infrastructure Advisory Facility – funded by the UK Department for International Development (DfID). This is a multi-year technical assistance project being implemented by Adam Smith International (ASI) of UK and CORE International, Inc. (CORE) of USA. This project has been supporting the Ministry of Power, the Power Holding Company of Nigeria (PHCN), the Nigeria Electricity Regulatory Commission (NERC), and the 18 unbundled companies – generation (6), transmission (1), and distribution (11) – in the country in a variety of areas. Specifically, the DfID technical assistance has been focusing on the following activities:

- Development of a White Paper on Government's Policy for Power Sector Reform for Madame Fatima Ibrahim, the former Minister of Power
- Development of a Business Plan for the PHCN and the 18 unbundled companies
- Development of a Financial Recovery Plan for the Unbundled Enterprises – including training sessions for the CEOs of the 18 unbundled companies in business planning, project development, and investment planning
- Providing advice and support to the development of the commercial framework for power, including gas to power
- Various project papers on Energy Crisis and Mitigation Strategies, IPP Development and Barriers, Technology for Improving Network Control, and Operations, and the Gas Sector Strategy
- Funding of the Power Program Support Unit in the Ministry of Power, to provide improved planning, monitoring and oversight capacity
- Development of a Design Strategy for National Power Training Institute of Nigeria (NAPTIN).

Currently, among many parallel activities, ASI is supporting a major program – the “Blue Print Distributor” – in collaboration with the Ministry of Power. The objective of this initiative is to work with three distribution companies selected as models by the Ministry and support them in the transition process through strengthening their commercial operations. The distribution companies selected are two companies in Lagos – (i) Eko Electricity Distribution Company and (ii) Ikeja Electricity Distribution Company, and the Abuja Electricity Distribution Company in Abuja.

The Ministry recognizes the need of these utilities also at the operations end as they need to implement technologies and systems to improve their operational efficiency through better network control, improved network operations, better outage management, and

overall better customer service. In addition, the Ministry of Power is in need of providing these utilities basic technical training needed for improving their operations.

Accordingly, the National Power Training Institute of Nigeria (NAPTIN), launched by the Minister of Power on September 1, 2009, has requested assistance from the U.S. Trade and Development Agency (USTDA) to finance the cost of a two-part study that shall focus on an assessment of the technology needs of the three utilities for improving their operational and technical systems performance and the provision of training to senior utility engineers and technicians on the benefits of various IT systems that can significantly improve their service quality and system efficiency.

2. Objectives of the Study

The objective of the proposed Study (the "Study") is for the selected Contractor to implement a two-part technical assistance that includes both a feasibility study and related training in overall power distribution operations and efficiency improvement. The two parts shall be as follows:

- **PART 1:** Technical Assessments of the Technology Gaps and Requirements for Improving System Operations Efficiency and the Quality of Service to Consumers
- **PART 2:** Design and Conducting of Four Training Courses for Utility Engineers and Technicians in the Benefits of Modern IT Systems and Technologies for Power Distribution Systems Operations.

3. Scope of Work and Tasks

The scope of the proposed Study shall include three distribution companies that are part of the Ministry of Power's "Blueprint Distribution" program. The three distribution utilities selected by the Ministry are as follows:

- Eko Electricity Distribution Company, Plc, Lagos, Nigeria
- Ikeja Electricity Distribution Company, Plc, Ikeja, Lagos, Nigeria
- Abuja Electricity Distribution Company, Plc, Abuja, Nigeria

The overarching objective of the Ministry under the "Blueprint Distribution" Program is provide assistance to the three distribution companies in transforming them into modern distribution companies managed and operated as commercial enterprises providing acceptable quality of service to their respective consumers. As mentioned earlier, the assistance being provided by ASI, UK under the DfID program focuses on commercial issues and with pilot projects on improving ("regularizing") connections, metering, anti-theft

measures, billing, and collections. This program funded by the USTDA shall focus on network operations, network control, outage management, and customer service improvements through the utilization of modern distribution IT systems.

EXHIBIT II: DISTRIBUTION OF TOTAL LABOR BUDGET AMONG VARIOUS TASKS

POWER DISTRIBUTION OPERATIONS TECHNOLOGY NEEDS ASSESSMENT AND CAPACITY BUILDING IN SELECTED DISTRIBUTION COMPANIES IN NIGERIA

TOTAL LABOR PART OF THE BUDGET FOR THE FEASIBILITY STUDY		100%	\$487,500
Task	Percent of Labor Budget	Amount	
Task 1: Review Current Distribution System Operations and Systems/Technologies and Tools	13.85%		\$67,500.00
Task 2: Identify Gaps and Requirements and Develop an Integrated Strategy for IT Deployment at the Three Utilities	20%		\$97,500.00
Task 3: Develop an Implementation Plan for the Recommended Strategies		12.31%	\$60,000.00
Task 4: Prepare Procurement Related Documents and Specifications		12.31%	\$60,000.00
Task 5: Select and Design Four One-Week Courses for the Distribution Utility Engineers and Technicians		15.38%	\$75,000.00
Task 6: Conduct Four One-Week Courses to Distribution Engineers and Technicians at the Three Distribution Utilities		12.31%	\$60,000.00
Task 7: Assess the Development Impacts and Preliminary Environmental Impacts of the Project		3.08%	\$15,000.00
Task 8: Prepare and Submit Final Report		10.77%	\$52,500.00

EXHIBIT III: DISTRIBUTION OF TOTAL LABOR PERSON HOURS AMONG VARIOUS TASKS AND EXPERTS

**POWER DISTRIBUTION OPERATIONS TECHNOLOGY NEEDS ASSESSMENT AND CAPACITY BUILDING IN SELECTED
DISTRIBUTION COMPANIES IN NIGERIA**

PROPOSED EXPERTS	TASK 1	TASK 2	TASK 3	TASK 4	TASK 5	TASK 6	TASK 7	TASK 8	TOTAL DAYS
1. Team Leader, Power Distribution Technology Expert	20	30	20	20	15	20	0	10	135
2. Distribution Management Expert	20	30	20	20	15	20	0	10	135
3. Power Sector Training Design Expert	5	5	0	0	20	20	0	10	60
4. Environmental and Dev. Impact Expert	0	0	0	0	0	0	10	5	15
TOTAL DAYS	45	65	40	40	50	60	10	35	345

EXHIBIT IV: PROPOSED SCHEDULE FOR THE STUDY

POWER DISTRIBUTION OPERATIONS TECHNOLOGY NEEDS ASSESSMENT AND CAPACITY BUILDING IN SELECTED DISTRIBUTION COMPANIES IN NIGERIA

ANNEEX3



U.S. TRADE AND DEVELOPMENT AGENCY
Arlington, VA 22209-2131

NATIONALITY, SOURCE, AND ORIGIN REQUIREMENTS

The purpose of USTDA's nationality, source, and origin requirements is to assure the maximum practicable participation of American contractors, technology, equipment and materials in the prefeasibility, feasibility, and implementation stages of a project.

USTDA STANDARD RULE (GRANT AGREEMENT STANDARD LANGUAGE):

Except as USTDA may otherwise agree, each of the following provisions shall apply to the delivery of goods and services funded by USTDA under this Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from host country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for implementation of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in host country are not subject to the above restrictions. USTDA will make available further details concerning these standards of eligibility upon request.

NATIONALITY:

1) Rule

Except as USTDA may otherwise agree, the Contractor for USTDA funded activities must be either a U.S. firm or a U.S. individual. Prime contractors may utilize U.S.

subcontractors without limitation, but the use of host country subcontractors is limited to 20% of the USTDA grant amount.

2) Application

Accordingly, only a U.S. firm or U.S. individual may submit proposals on USTDA funded activities. Although those proposals may include subcontracting arrangements with host country firms or individuals for up to 20% of the USTDA grant amount, they may not include subcontracts with third country entities. U.S. firms submitting proposals must ensure that the professional services funded by the USTDA grant, to the extent not subcontracted to host country entities, are supplied by employees of the firm or employees of U.S. subcontractor firms who are U.S. individuals.

Interested U.S. firms and consultants who submit proposals must meet USTDA nationality requirements as of the due date for the submission of proposals and, if selected, must continue to meet such requirements throughout the duration of the USTDA-financed activity. These nationality provisions apply to whatever portion of the Terms of Reference is funded with the USTDA grant.

3) Definitions

A "U.S. individual" is (a) a U.S. citizen, or (b) a non-U.S. citizen lawfully admitted for permanent residence in the U.S. (a green card holder).

A "U.S. firm" is a privately owned firm which is incorporated in the U.S., with its principal place of business in the U.S., and which is either (a) more than 50% owned by U.S. individuals, or (b) has been incorporated in the U.S. for more than three (3) years prior to the issuance date of the request for proposals; has performed similar services in the U.S. for that three (3) year period; employs U.S. citizens in more than half of its permanent full-time positions in the U.S.; and has the existing capability in the U.S. to perform the work in question.

A partnership, organized in the U.S. with its principal place of business in the U.S., may also qualify as a "U.S. firm" as would a joint venture organized or incorporated in the United States consisting entirely of U.S. firms and/or U.S. individuals.

A nonprofit organization, such as an educational institution, foundation, or association may also qualify as a "U.S. firm" if it is incorporated in the United States and managed by a governing body, a majority of whose members are U.S. individuals.

SOURCE AND ORIGIN:

1) Rule

In addition to the nationality requirement stated above, any goods (e.g., equipment and materials) and services related to their shipment (e.g., international transportation and insurance) funded under the USTDA Grant Agreement must have their source and origin in the United States, unless USTDA otherwise agrees. However, necessary purchases of goods and project support services which are unavailable from a U.S. source (e.g., local food, housing and transportation) are eligible without specific USTDA approval.

2) Application

Accordingly, the prime contractor must be able to demonstrate that all goods and services purchased in the host country to carry out the Terms of Reference for a USTDA Grant Agreement that were not of U.S. source and origin were unavailable in the United States.

3) Definitions

"Source" means the country from which shipment is made.

"Origin" means the place of production, through manufacturing, assembly or otherwise.

Questions regarding these nationality, source and origin requirements may be addressed to the USTDA Office of General Counsel.

ANNE X 4

Nigeria 2010-1027A

RECEIVED
U.S. TRADE AND DEVELOPMENT AGENCY
AUG - 3 2010
PF

This Grant Agreement is entered into between the Government of the United States of America, acting through the U.S. Trade and Development Agency ("USTDA") and the National Power Training Institute of Nigeria ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Agreement US \$616,000 ("USTDA Grant") to fund the cost of goods and services required for technical assistance ("TA") on the proposed Power Loss Reduction Technologies project ("Project") in Nigeria ("Host Country").

PM
NG

LB
JT
MB
PD
RC
KA
LZ
PD
JW

1. USTDA Funding

The funding to be provided under this Grant Agreement shall be used to fund the costs of a contract between the Grantee and the U.S. firm selected by the Grantee ("Contractor") under which the Contractor will perform the TA ("Contract"). Payment to the Contractor will be made directly by USTDA on behalf of the Grantee with the USTDA Grant funds provided under this Grant Agreement.

2. Terms of Reference

The Terms of Reference for the TA ("Terms of Reference") are attached as Annex I and are hereby made a part of this Grant Agreement. The TA will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the TA shall also be included in the Contract.

3. Standards of Conduct

USTDA and the Grantee recognize the existence of standards of conduct for public officials, and commercial entities, in their respective countries. The parties to this Grant Agreement and the Contractor shall observe these standards, which include not accepting payment of money or anything of value, directly or indirectly, from any person for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the TA.

4. Grantee Responsibilities

The Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

5. USTDA as Financier

(A) USTDA Approval of Competitive Selection Procedures

Selection of the U.S. Contractor shall be carried out by the Grantee according to its established procedures for the competitive selection of contractors with advance notice of the procurement published online through *Federal Business Opportunities* (www.fedbizopps.gov). Upon request, the Grantee will submit these contracting procedures and related documents to USTDA for information and/or approval.

(B) USTDA Approval of Contractor Selection

The Grantee shall notify USTDA at the address of record set forth in Article 17 below upon selection of the Contractor to perform the TA. Upon approval of this selection by USTDA, the Grantee and the Contractor shall then enter into a contract for performance of the TA. The Grantee shall notify in writing the U.S. firms that submitted unsuccessful proposals to perform the TA that they were not selected.

(C) USTDA Approval of Contract Between Grantee and Contractor

The Grantee and the Contractor shall enter into a contract for performance of the TA. This contract, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing. To expedite this approval, the Grantee (or the Contractor on the Grantee's behalf) shall transmit to USTDA, at the address set forth in Article 17 below, a photocopy of an English language version of the signed contract or a final negotiated draft version of the contract.

(D) USTDA Not a Party to the Contract

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of the contract and any amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of funding the TA and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not bar the Grantee or USTDA from asserting any right they might have against the

Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Grantee or USTDA.

(E) Grant Agreement Controlling

Regardless of USTDA approval, the rights and obligations of any party to the contract or subcontract thereunder must be consistent with this Grant Agreement. In the event of any inconsistency between the Grant Agreement and any contract or subcontract funded by the Grant Agreement, the Grant Agreement shall be controlling.

6. Disbursement Procedures

(A) USTDA Approval of Contract Required

USTDA will make disbursements of Grant funds directly to the Contractor only after USTDA approves the Grantee's contract with the Contractor.

(B) Contractor Invoice Requirements

The Grantee should request disbursement of funds by USTDA to the Contractor for performance of the TA by submitting invoices in accordance with the procedures set forth in the USTDA Mandatory Clauses in Annex II.

7. Effective Date

The effective date of this Grant Agreement ("Effective Date") shall be the date of signature by both parties or, if the parties sign on different dates, the date of the last signature.

8. TA Schedule

(A) TA Completion Date

The completion date for the TA, which is August 1, 2012, is the date by which the parties estimate that the TA will have been completed.

(B) Time Limitation on Disbursement of USTDA Grant Funds

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this Grant Agreement for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

9. USTDA Mandatory Clauses

All contracts funded under this Grant Agreement shall include the USTDA mandatory clauses set forth in Annex II to this Grant Agreement. All subcontracts funded or partially funded with USTDA Grant funds shall include the USTDA mandatory clauses, except for clauses B(1), G, H, I, and J.

10. Use of U.S. Carriers

(A) Air

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

(B) Marine

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

11. Nationality, Source and Origin

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the TA and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to TA support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

12. Taxes

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Grantee nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

13. Cooperation Between Parties and Follow-Up

The parties will cooperate to assure that the purposes of the Grant Agreement are accomplished. For five (5) years following receipt by USTDA of the Final Report (as defined in Clause I of Annex II), the Grantee agrees to respond to any reasonable inquiries from USTDA about the status of the Project.

14. Implementation Letters

To assist the Grantee in the implementation of the TA, USTDA may, from time to time, issue implementation letters that will provide additional information about matters covered by the Grant Agreement. The parties may also use jointly agreed upon implementation letters to confirm and record their mutual understanding of matters covered by the Grant Agreement.

15. Recordkeeping and Audit

The Grantee agrees to maintain books, records, and other documents relating to the TA and the Grant Agreement adequate to demonstrate implementation of its responsibilities under the Grant Agreement, including the selection of contractors, receipt and approval of contract deliverables, and approval or disapproval of contractor invoices for payment by USTDA. Such books, records, and other documents shall be separately maintained for three (3) years after the date of the final disbursement by USTDA. The Grantee shall afford USTDA or its authorized representatives the opportunity at reasonable times to review books, records, and other documents relating to the TA and the Grant Agreement.

16. Representation of Parties

For all purposes relevant to the Grant Agreement, the Government of the United States of America will be represented by the U. S. Ambassador to Host Country or USTDA and Grantee will be represented by the Chief Executive Officer. The parties hereto may, by written notice, designate additional representatives for all purposes under the Grant Agreement.

17. Addresses of Record for Parties

Any notice, request, document, or other communication submitted by either party to the other under the Grant Agreement shall be in writing or through a wire or electronic medium which produces a tangible record of the transmission, such as a telegram, cable or facsimile, and will be deemed duly given or sent when delivered to such party at the following:

To: National Power Training Institute of Nigeria
No 1124 Eldoret Close, off Aminu Kano Close
Wuse 2
Abuja, Nigeria

Phone: +2348058007538
Electronic Mail: rookeke@yahoo.com

To: U.S. Trade and Development Agency
1000 Wilson Boulevard, Suite 1600
Arlington, Virginia 22209-3901
USA

Phone: (703) 875-4357
Fax: (703) 875-4009

All such communications shall be in English, unless the parties otherwise agree in writing. In addition, the Grantee shall provide the Commercial Section of the U.S. Embassy in Host Country with a copy of each communication sent to USTDA.

Any communication relating to this Grant Agreement shall include the following fiscal data:

Appropriation No.: 11 10/11 1001
Activity No.: 2010-11027A
Reservation No.: 2010110034
Grant No.: GH2010110012

18. Termination Clause

Either party may terminate the Grant Agreement by giving the other party thirty (30) days advance written notice. The termination of the Grant Agreement will end any obligations of the parties to provide financial or other resources for the TA, except for payments which they are committed to make pursuant to noncancelable commitments entered into with third parties prior to the written notice of termination.

19. Non-waiver of Rights and Remedies

No delay in exercising any right or remedy accruing to either party in connection with the Grant Agreement shall be construed as a waiver of such right or remedy.

20. U.S. Technology and Equipment

By funding this TA, USTDA seeks to promote the project objectives of the Host Country through the use of U.S. technology, goods, and services. In recognition of this purpose, the Grantee agrees that it will allow U.S. suppliers to compete in the procurement of technology, goods and services needed for Project implementation.

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IN WITNESS WHEREOF, the Government of the United States of America and the National Power Training Institute of Nigeria, each acting through its duly authorized representative, have caused this Agreement to be signed in the English language in their names and delivered as of the day and year written below. In the event that this Grant Agreement is signed in more than one language, the English language version shall govern.

For the Government of the
United States of America

By: Laura J. Zell

Date: August 2, 2010

For the National Power
Training Institute of Nigeria

By: SAJ

Date: 02/08/10

Annex I -- Terms of Reference

Annex II -- USTDA Mandatory Clauses

Annex I

Terms of Reference

The objective of this technical assistance is to make recommendations on infrastructure and process improvements which can reduce technical and non-technical power distribution losses in Nigeria, and conduct training on the implementation of these technologies. The Ministry of Power has selected three distribution companies (“Companies”) which shall be the focus of this technical assistance:

- 1) Eko Electricity Distribution Company, Plc (“Eko EDC”)
- 2) Ikeja Electricity Distribution Company, Plc (“Ikeja EDC”)
- 3) Abuja Electricity Distribution Company, Plc (“Abuja EDC”)

The technical assistance is intended to improve the efficiency and commercial viability of the selected distribution companies to ensure their long-term viability. As described below, the technical assistance shall focus on network operations, network control, outage management, and customer service improvements through the utilization of modern distribution IT systems.

The USTDA Grant shall be administered through the National Power Training Institute of Nigeria (Grantee). Each of the Companies shall nominate a point of contact (“POC”) to act as a liaison with the Grantee for the purpose of this technical assistance. These POCs shall be named in the work contract between the Grantee and the Contractor.

Task 1: Review of Current Distribution System

The Contractor shall develop a Work Plan and Timetable for carrying out the Study in consultation with the Grantee.

Task 1.1: Eko Electricity Distribution Company

- a) The Contractor shall assess Eko EDC’s current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor’s analysis shall include, at least:
 - Geographic Information Systems (GIS) Planning and Design;
 - Enterprise Resource Program (ERP);
 - Customer Information System (CIS);
 - Customer Relations Management (CRM) and customer database;
 - Supervisory Control and Data Acquisition (SCADA) systems;
 - AutoCad;
 - Mobile Communications;
 - Business Case Analysis;
 - Power System Analysis Tool (PSAT);

- Outage Management System (OMS);
 - Communications System for Distribution Automation (i.e. IEC61850);
and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Eko EDC POC and the Power Holding Company of Nigeria's (PHCN) transmission staff to better understand how Eko EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Eko EDC's links to the power transmission system.

Task 1.2: Ikeja Electricity Distribution Company

- a) The Contractor shall assess Ikeja EDC's current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor's analysis shall include, at least:
 - GIS Planning and Design;
 - ERP;
 - CIS;
 - CRM and customer database;
 - SCADA systems;
 - AutoCad;
 - Mobile Communications;
 - Business Case Analysis;
 - PSAT;
 - OMS;
 - IEC61850; and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Ikeja EDC POC and PHCN's transmission staff to better understand how Ikeja EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Ikeja EDC's links to the power transmission system.

Task 1.3: Abuja Electricity Distribution Company

- a) The Contractor shall assess Abuja EDC's current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor's analysis shall include, at least:
 - GIS Planning and Design;
 - ERP;

- CIS;
 - CRM and customer database;
 - SCADA systems;
 - AutoCad;
 - Mobile Communications;
 - Business Case Analysis;
 - PSAT;
 - OMS;
 - IEC61850; and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Abuja EDC POC and PHCN's transmission staff to better understand how Abuja EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Abuja EDC's links to the power transmission system.

Task 1 Deliverable: The Contractor shall prepare a report of all work performed under Task 1. The Task 1 Deliverable shall be included in the Final Report.

Task 2: Distribution System Upgrade Requirements

Task 2.1: Eko Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Eko EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
- Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Eko EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by the Nigerian Electricity Regulatory Commission (NERC).
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Eko EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Eko EDC. For each of the recommended technologies, the Contractor shall provide an explanation of the benefits of the recommended technology and propose any operational processes and work flow modifications required.

- d) The Contractor shall develop a budget for the recommended technology upgrades for Eko EDC including costs of installation, operation, and maintenance.

Task 2.2: Ikeja Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Ikeja EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
- Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Ikeja EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by NERC.
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Ikeja EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Ikeja EDC. For each of the recommended technologies, the Contractor shall provide an explanation of the benefits of the recommended technology and propose any operational processes and work flow modifications required.
- d) The Contractor shall develop a budget for the recommended technology upgrades for Ikeja EDC including costs of installation, operation, and maintenance.

Task 2.3: Abuja Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Abuja EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
- Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Abuja EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by NERC.
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Abuja EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Abuja EDC. For each of the recommended technologies, the

Contractor shall provide an explanation of the benefits of the recommended technology and propose any operational processes and work flow modifications required.

- d) The Contractor shall develop a budget for the recommended technology upgrades for Abuja EDC including costs of installation, operation, and maintenance.

Task 2 Deliverable: The Contractor shall prepare a report of all work performed under Task 2. The Task 2 Deliverable shall be included in the Final Report.

Task 3: Implementation Plan

Task 3.1: Eko Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Eko EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3.2: Ikeja Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Ikeja EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3.3: Abuja Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Abuja EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3 Deliverable: The Contractor shall prepare a report of all work performed under Task 3. The Task 3 Deliverable shall be included in the Final Report.

Task 4: Procurement Documents and Specifications

Task 4.1: Eko Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Eko EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4.2: Ikeja Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Ikeja EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4.3: Abuja Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Abuja EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4 Deliverable: The Contractor shall prepare a report of all work performed under Task 4. The Task 4 Deliverable shall be included in the Final Report.

Task 5: Capacity Building for Distribution Utility Engineers and Technicians

In consultation with the Grantee and each of the Companies, the Contractor shall develop and deliver at least four one-week training sessions to cover topics of high interest to the Grantee and each of the Companies. The training shall incorporate the technologies recommended to each of the companies in Task 2 above. The course topics may include, but are not limited to, the following:

- Technologies for improving and measuring quality of supply and service;
- Outage management systems for power distribution;
- Asset management systems for power distribution utilities;
- Supervisory control and data acquisition (SCADA);
- Work flow management systems;
- Geographic information systems;
- Customer information systems;
- Integration software and bus architecture applications for enterprise management

The Contractor shall develop and provide all course materials. The course materials shall include power point presentations, mock exercises, and technology showcase studies to illustrate the benefits of deploying the technologies recommended in Task 2 above.

The training shall include approximately 10 engineers and technicians from each of the Companies, and approximately 8 representatives of the Grantee who may be responsible for delivering similar training programs in the future. The Grantee shall provide facilities for the training to take place. The Contractor shall not be responsible for the travel costs of any training participants.

After the delivery of each course, the Contractor shall conduct a course evaluation survey and seek participant feedback on the quality and value of the training course. The results of the surveys shall be aimed at assisting the Grantee in developing and delivering similar training courses in the future.

Task 5 Deliverable: The Contractor shall prepare a report of all work performed under Task 5. The Task 5 Deliverable shall be included in the Final Report.

Task 6: Developmental Impact Analysis

Task 6.1: Eko Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Eko EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure:* improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements:* introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building:* new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms:* transparency and private sector participation.
- e) *Other/Spin-Off Effects:* any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6.2: Ikeja Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Ikeja EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure*: improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements*: introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building*: new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms*: transparency and private sector participation.
- e) *Other/Spin-Off Effects*: any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6.3: Abuja Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Abuja EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure*: improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements*: introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building*: new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms*: transparency and private sector participation.
- e) *Other/Spin-Off Effects*: any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6 Deliverable: The Contractor shall prepare a report of all work performed under Task 6. The Task 6 Deliverable shall be included in the Final Report.

Task 7: Preliminary Environmental Impact Assessment

Task 7.1: Eko Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Eko EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7.2: Ikeja Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Ikeja EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7.3: Abuja Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Abuja EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7 Deliverable: The Contractor shall prepare a report of all work performed under Task 7. The Task 7 Deliverable shall be included in the Final Report.

Task 8: Final Report

The Contractor shall prepare and deliver to the Grantee, each of the Companies, and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference (“Final Report”). The Final Report shall be organized according to the above tasks, and shall include all deliverables, training materials, and documents that have been provided to the Grantee and each of the Companies. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

Notes:

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.

Annex II

USTDA Mandatory Contract Clauses

A. USTDA Mandatory Clauses Controlling

The parties to this contract acknowledge that this contract is funded in whole or in part by the U.S. Trade and Development Agency ("USTDA") under the Grant Agreement between the Government of the United States of America acting through USTDA and the National Power Training Institute of Nigeria ("Client"), dated _____ ("Grant Agreement"). The Client has selected _____ ("Contractor") to perform the technical assistance ("TA") for the Loss Reduction Technologies project ("Project") in Nigeria ("Host Country"). Notwithstanding any other provisions of this contract, the following USTDA mandatory contract clauses shall govern. All subcontracts entered into by Contractor funded or partially funded with USTDA Grant funds shall include these USTDA mandatory contract clauses, except for clauses B(1), G, H, I, and J. In addition, in the event of any inconsistency between the Grant Agreement and any contract or subcontract thereunder, the Grant Agreement shall be controlling.

B. USTDA as Financier

(1) USTDA Approval of Contract

All contracts funded under the Grant Agreement, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing in order to be effective with respect to the expenditure of USTDA Grant funds. USTDA will not authorize the disbursement of USTDA Grant funds until the contract has been formally approved by USTDA or until the contract conforms to modifications required by USTDA during the contract review process.

(2) USTDA Not a Party to the Contract

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this contract and amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing the TA and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not bar

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the Client or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Client or USTDA.

C. Nationality, Source and Origin

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the TA and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to TA support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

D. Recordkeeping and Audit

The Contractor and subcontractors funded under the Grant Agreement shall maintain, in accordance with generally accepted accounting procedures, books, records, and other documents, sufficient to reflect properly all transactions under or in connection with the contract. These books, records, and other documents shall clearly identify and track the use and expenditure of USTDA funds, separately from other funding sources. Such books, records, and documents shall be maintained during the contract term and for a period of three (3) years after final disbursement by USTDA. The Contractor and subcontractors shall afford USTDA, or its authorized representatives, the opportunity at reasonable times for inspection and audit of such books, records, and other documentation.

E. U.S. Carriers

(1) Air

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

(2) Marine

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

F. Workman's Compensation Insurance

The Contractor shall provide adequate Workman's Compensation Insurance coverage for work performed under this Contract.

G. Reporting Requirements

The Contractor shall advise USTDA by letter as to the status of the Project on March 1st annually for a period of two (2) years after completion of the TA. In addition, if at any time the Contractor receives follow-on work from the Client, the Contractor shall so notify USTDA and designate the Contractor's contact point including name, telephone, and fax number. Since this information may be made publicly available by USTDA, any information which is confidential shall be designated as such by the Contractor and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

H. Disbursement Procedures

(1) USTDA Approval of Contract

Disbursement of Grant funds will be made only after USTDA approval of this contract. To make this review in a timely fashion, USTDA must receive from either the Client or the Contractor a photocopy of an English language version of a signed contract or a final negotiated draft version to the attention of the General Counsel's office at USTDA's address listed in Clause M below.

(2) Payment Schedule Requirements

A payment schedule for disbursement of Grant funds to the Contractor shall be included in this Contract. Such payment schedule must conform to the following USTDA requirements: (1) up to twenty percent (20%) of the total USTDA Grant amount may be used as a mobilization payment; (2) all other payments, with the exception of the final payment, shall be based upon contract performance milestones; and (3) the final payment may be no less than fifteen percent (15%) of the total USTDA Grant amount, payable upon receipt by USTDA of an approved Final Report in accordance with the specifications and quantities set forth in Clause I below. Invoicing procedures for all payments are described below.

(3) Contractor Invoice Requirements

USTDA will make all disbursements of USTDA Grant funds directly to the Contractor. The Contractor must provide USTDA with an ACH Vendor Enrollment Form (available from USTDA) with the first invoice. The Client shall request disbursement of funds by USTDA to the Contractor for performance of the contract by submitting the following to USTDA:

(a) Contractor's Invoice

The Contractor's invoice shall include reference to an item listed in the Contract payment schedule, the requested payment amount, and an appropriate certification by the Contractor, as follows:

- (i) For a mobilization payment (if any):

"As a condition for this mobilization payment, the Contractor certifies that it will perform all work in accordance with the terms of its Contract with the Client. To the extent that the Contractor does not comply with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

- (ii) For contract performance milestone payments:

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

- (iii) For final payment:

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. Specifically, the Contractor has submitted the Final Report to the Client, as required by the Contract, and received the Client's approval of the Final Report. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

(b) Client's Approval of the Contractor's Invoice

- (i) The invoice for a mobilization payment must be approved in writing by the Client.

(ii) For contract performance milestone payments, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement."

(iii) For final payment, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the Contractor has been reviewed and approved by the Client."

(c) USTDA Address for Disbursement Requests

Requests for disbursement shall be submitted by courier or mail to the attention of the Finance Department at USTDA's address listed in Clause M below.

(4) Termination

In the event that the Contract is terminated prior to completion, the Contractor will be eligible, subject to USTDA approval, for reasonable and documented costs which have been incurred in performing the Terms of Reference prior to termination, as well as reasonable wind down expenses. Reimbursement for such costs shall not exceed the total amount of undisbursed Grant funds. Likewise, in the event of such termination, USTDA is entitled to receive from the Contractor all USTDA Grant funds previously disbursed to the Contractor (including but not limited to mobilization payments) which exceed the reasonable and documented costs incurred in performing the Terms of Reference prior to termination.

I. USTDA Final Report

(1) Definition

"Final Report" shall mean the Final Report described in the attached Annex I Terms of Reference or, if no such "Final Report" is described therein, "Final Report" shall mean a substantive and comprehensive report of work performed in accordance with the attached Annex I Terms of Reference, including any documents delivered to the Client.

(2) Final Report Submission Requirements

The Contractor shall provide the following to USTDA:

(a) One (1) complete version of the Final Report for USTDA's records. This version shall have been approved by the Client in writing and must be in the English language. It is the responsibility of the Contractor to ensure that confidential information, if any, contained in this version be clearly marked. USTDA will maintain the confidentiality of such information in accordance with applicable law.

and

(b) One (1) copy of the Final Report suitable for public distribution ("Public Version"). The Public Version shall have been approved by the Client in writing and must be in the English language. As this version will be available for public distribution, it must not contain any confidential information. If the report in (a) above contains no confidential information, it may be used as the Public Version. In any event, the Public Version must be informative and contain sufficient Project detail to be useful to prospective equipment and service providers.

and

(c) Two (2) CD-ROMs, each containing a complete copy of the Public Version of the Final Report. The electronic files on the CD-ROMs shall be submitted in a commonly accessible read-only format. As these CD-ROMs will be available for public distribution, they must not contain any confidential information. It is the responsibility of the Contractor to ensure that no confidential information is contained on the CD-ROMs.

The Contractor shall also provide one (1) copy of the Public Version of the Final Report to the Foreign Commercial Service Officer or the Economic Section of the U.S. Embassy in Host Country for informational purposes.

(3) Final Report Presentation

All Final Reports submitted to USTDA must be paginated and include the following:

(a) The front cover of every Final Report shall contain the name of the Client, the name of the Contractor who prepared the report, a report title, USTDA's logo, USTDA's mailing and delivery addresses. If the complete version of the Final Report contains confidential information, the Contractor shall be responsible for labeling the front cover of that version of the Final Report with the term "Confidential Version." The Contractor shall be responsible for labeling the front cover of the Public Version of the Final Report with the term "Public Version." The front cover of every Final Report shall also contain the following disclaimer:

"This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U. S. Government. The opinions, findings, conclusions or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of

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USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report."

(b) The inside front cover of every Final Report shall contain USTDA's logo, USTDA's mailing and delivery addresses, and USTDA's mission statement. Camera-ready copy of USTDA Final Report specifications will be available from USTDA upon request.

(c) The Contractor shall affix to the front of the CD-ROM a label identifying the Host Country, USTDA Activity Number, the name of the Client, the name of the Contractor who prepared the report, a report title, and the following language:

"The Contractor certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution."

(d) The Contractor and any subcontractors that perform work pursuant to the Grant Agreement must be clearly identified in the Final Report. Business name, point of contact, address, telephone and fax numbers shall be included for Contractor and each subcontractor.

(e) The Final Report, while aiming at optimum specifications and characteristics for the Project, shall identify the availability of prospective U.S. sources of supply. Business name, point of contact, address, telephone and fax numbers shall be included for each commercial source.

(f) The Final Report shall be accompanied by a letter or other notation by the Client which states that the Client approves the Final Report. A certification by the Client to this effect provided on or with the invoice for final payment will meet this requirement.

J. Modifications

All changes, modifications, assignments or amendments to this contract, including the appendices, shall be made only by written agreement by the parties hereto, subject to written USTDA approval.

K. TA Schedule

(1) TA Completion Date

The completion date for the TA, which is August 1, 2012, is the date by which the parties estimate that the TA will have been completed.

(2) Time Limitation on Disbursement of USTDA Grant Funds

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this contract for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

L. Business Practices

The Contractor agrees not to pay, promise to pay, or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a governmental official or private individual) for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the TA. The Client agrees not to receive any such payment. The Contractor and the Client agree that each will require that any agent or representative hired to represent them in connection with the TA will comply with this paragraph and all laws which apply to activities and obligations of each party under this Contract, including but not limited to those laws and obligations dealing with improper payments as described above.

M. USTDA Address and Fiscal Data

Any communication with USTDA regarding this Contract shall be sent to the following address and include the fiscal data listed below:

U.S. Trade and Development Agency
1000 Wilson Boulevard, Suite 1600
Arlington, Virginia 22209-3901
USA

Phone: (703) 875-4357
Fax: (703) 875-4009

Fiscal Data:

Appropriation No.: 11 10/11 1001
Activity No.: 2010-11027A
Reservation No.: 2010110034
Grant No.: GH2010110012

N. Definitions

All capitalized terms not otherwise defined herein shall have the meaning set forth in the Grant Agreement.

O. Taxes

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Client nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

ANNEX 5

Terms of Reference

The objective of this technical assistance is to make recommendations on infrastructure and process improvements which can reduce technical and non-technical power distribution losses in Nigeria, and conduct training on the implementation of these technologies. The Ministry of Power has selected three distribution companies (“Companies”) which shall be the focus of this technical assistance:

- 1) Eko Electricity Distribution Company, Plc (“Eko EDC”)
- 2) Ikeja Electricity Distribution Company, Plc (“Ikeja EDC”)
- 3) Abuja Electricity Distribution Company, Plc (“Abuja EDC”)

The technical assistance is intended to improve the efficiency and commercial viability of the selected distribution companies to ensure their long-term viability. As described below, the technical assistance shall focus on network operations, network control, outage management, and customer service improvements through the utilization of modern distribution IT systems.

The USTDA Grant shall be administered through the National Power Training Institute of Nigeria (Grantee). Each of the Companies shall nominate a point of contact (“POC”) to act as a liaison with the Grantee for the purpose of this technical assistance. These POCs shall be named in the work contract between the Grantee and the Contractor.

Task 1: Review of Current Distribution System

The Contractor shall develop a Work Plan and Timetable for carrying out the Study in consultation with the Grantee.

Task 1.1: Eko Electricity Distribution Company

- a) The Contractor shall assess Eko EDC’s current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor’s analysis shall include, at least:

- Geographic Information Systems (GIS) Planning and Design;
- Enterprise Resource Program (ERP);
- Customer Information System (CIS);
- Customer Relations Management (CRM) and customer database;
- Supervisory Control and Data Acquisition (SCADA) systems;
- AutoCad;
- Mobile Communications;
- Business Case Analysis;
- Power System Analysis Tool (PSAT);
- Outage Management System (OMS);

- Communications System for Distribution Automation (i.e. IEC61850); and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Eko EDC POC and the Power Holding Company of Nigeria's (PHCN) transmission staff to better understand how Eko EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Eko EDC's links to the power transmission system.

Task 1.2: Ikeja Electricity Distribution Company

- a) The Contractor shall assess Ikeja EDC's current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor's analysis shall include, at least:
 - GIS Planning and Design;
 - ERP;
 - CIS;
 - CRM and customer database;
 - SCADA systems;
 - AutoCad;
 - Mobile Communications;
 - Business Case Analysis;
 - PSAT;
 - OMS;
 - IEC61850; and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Ikeja EDC POC and PHCN's transmission staff to better understand how Ikeja EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Ikeja EDC's links to the power transmission system.

Task 1.3: Abuja Electricity Distribution Company

- a) The Contractor shall assess Abuja EDC's current electricity distribution management practices and systems. The Contractor shall make note of any redundant or incompatible systems currently in use. The Contractor's analysis shall include, at least:
 - GIS Planning and Design;
 - ERP;
 - CIS;

- CRM and customer database;
 - SCADA systems;
 - AutoCad;
 - Mobile Communications;
 - Business Case Analysis;
 - PSAT;
 - OMS;
 - IEC61850; and
 - Automated Meter Reading Systems.
- b) The Contractor shall meet with the Abuja EDC POC and PHCN's transmission staff to better understand how Abuja EDC interacts with PHCN at the transmission level. The Contractor's analysis shall focus on the infrastructure and other integration needs which could improve the management of Abuja EDC's links to the power transmission system.

Task 1 Deliverable: The Contractor shall prepare a report of all work performed under Task 1. The Task 1 Deliverable shall be included in the Final Report.

Task 2: Distribution System Upgrade Requirements

Task 2.1: Eko Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Eko EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
- Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Eko EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by the Nigerian Electricity Regulatory Commission (NERC).
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Eko EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Eko EDC. For each of the recommended technologies, the Contractor shall provide an explanation of the benefits of the recommended technology and propose any operational processes and work flow modifications required.
- d) The Contractor shall develop a budget for the recommended technology upgrades for Eko EDC including costs of installation, operation, and maintenance.

Task 2.2: Ikeja Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Ikeja EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
 - Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Ikeja EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by NERC.
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Ikeja EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Ikeja EDC. For each of the recommended technologies, the Contractor shall provide an explanation of the benefits of the recommended technology and propose any operational processes and work flow modifications required.
- d) The Contractor shall develop a budget for the recommended technology upgrades for Ikeja EDC including costs of installation, operation, and maintenance.

Task 2.3: Abuja Electricity Distribution Company

- a) Based on the Contractor's analysis in Task 1 above, the Contractor shall identify ways for Abuja EDC to improve distribution systems management and information management. The Contractor's analysis shall include, at least:
 - Improving the efficiency of information flow;
 - Improving the efficiency of operations and work flows; and
 - Human resource and capacity building needs.
- b) The Contractor shall identify technology goals and requirements for Abuja EDC. The Contractor's analysis shall include a review of technology, quality of supply, and service standards and requirements mandated by NERC.
- c) The Contractor shall recommend technology upgrades to improve the efficiency of electricity distribution and quality of service for Abuja EDC. The Contractor's recommendations shall take account of current operational procedures and future requirements for Abuja EDC. For each of the recommended technologies, the Contractor shall provide an explanation of the benefits of the recommended

technology and propose any operational processes and work flow modifications required.

- d) The Contractor shall develop a budget for the recommended technology upgrades for Abuja EDC including costs of installation, operation, and maintenance.

Task 2 Deliverable: The Contractor shall prepare a report of all work performed under Task 2. The Task 2 Deliverable shall be included in the Final Report.

Task 3: Implementation Plan

Task 3.1: Eko Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Eko EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3.2: Ikeja Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Ikeja EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3.3: Abuja Electricity Distribution Company

The Contractor shall develop an implementation plan for the technology upgrades recommended for Abuja EDC in Task 2 above. The implementation plan shall propose timing for the recommended technology upgrades and process changes, as well as appropriate phasing and sequencing in order to minimize service disruptions.

Task 3 Deliverable: The Contractor shall prepare a report of all work performed under Task 3. The Task 3 Deliverable shall be included in the Final Report.

Task 4: Procurement Documents and Specifications

Task 4.1: Eko Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Eko EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4.2: Ikeja Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Ikeja EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4.3: Abuja Electricity Distribution Company

The Contractor shall provide detailed performance criteria and technical specifications for the technologies recommended in Task 2 above, and any other design, engineering, or support services which may be required during implementation. The performance criteria and technical specifications shall be in a format suitable for inclusion in tender documents issued by Abuja EDC during the procurement process. The Contractor shall not be responsible for the development or issuance of procurement documents.

For each recommended technology and service, the Contractor shall provide contact information for prospective U.S. sources of supply.

Task 4 Deliverable: The Contractor shall prepare a report of all work performed under Task 4. The Task 4 Deliverable shall be included in the Final Report.

Task 5: Capacity Building for Distribution Utility Engineers and Technicians

In consultation with the Grantee and each of the Companies, the Contractor shall develop and deliver at least four one-week training sessions to cover topics of high interest to the Grantee and each of the Companies. The training shall incorporate the technologies recommended to each of the companies in Task 2 above. The course topics may include, but are not limited to, the following:

- Technologies for improving and measuring quality of supply and service;
- Outage management systems for power distribution;
- Asset management systems for power distribution utilities;
- Supervisory control and data acquisition (SCADA);
- Work flow management systems;
- Geographic information systems;
- Customer information systems;
- Integration software and bus architecture applications for enterprise management

The Contractor shall develop and provide all course materials. The course materials shall include power point presentations, mock exercises, and technology showcase studies to illustrate the benefits of deploying the technologies recommended in Task 2 above.

The training shall include approximately 10 engineers and technicians from each of the Companies, and approximately 8 representatives of the Grantee who may be responsible for delivering similar training programs in the future. The Grantee shall provide facilities for the training to take place. The Contractor shall not be responsible for the travel costs of any training participants.

After the delivery of each course, the Contractor shall conduct a course evaluation survey and seek participant feedback on the quality and value of the training course. The results of the surveys shall be aimed at assisting the Grantee in developing and delivering similar training courses in the future.

Task 5 Deliverable: The Contractor shall prepare a report of all work performed under Task 5. The Task 5 Deliverable shall be included in the Final Report.

Task 6: Developmental Impact Analysis

Task 6.1: Eko Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Eko EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure:* improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements:* introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building:* new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms:* transparency and private sector participation.
- e) *Other/Spin-Off Effects:* any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6.2: Ikeja Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Ikeja EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure*: improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements*: introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building*: new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms*: transparency and private sector participation.
- e) *Other/Spin-Off Effects*: any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6.3: Abuja Electricity Distribution Company

The Contractor shall assess the development benefits associated with the Project. The assessment shall include examples of the development benefits that would be expected in the area serviced by Abuja EDC if the Project is implemented. The Assessment shall give emphasis to:

- a) *Infrastructure*: improvements in the physical, financial, and social infrastructure of Nigeria.
- b) *Technology Transfer and Productivity Improvements*: introduction of advanced technologies and improvement of processes that stimulate greater economic productivity.
- c) *Human Capacity Building*: new job opportunities, sustained employment, or advanced training to upgrade the capability of the workforce.
- d) *Market-Oriented Reforms*: transparency and private sector participation.
- e) *Other/Spin-Off Effects*: any other developmental benefits derived from the Project including, for example, energy efficiency, improved quality of service, etc.

Task 6 Deliverable: The Contractor shall prepare a report of all work performed under Task 6. The Task 6 Deliverable shall be included in the Final Report.

Task 7: Preliminary Environmental Impact Assessment

Task 7.1: Eko Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Eko EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7.2: Ikeja Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Ikeja EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7.3: Abuja Electricity Distribution Company

The Contractor shall prepare a Preliminary Environmental Impact Assessment that identifies any potential negative and positive impacts resulting from the Project for the area serviced by Abuja EDC. This Assessment shall include reference to local requirements and requirements of multi-lateral lending agencies, such as the World Bank and African Development Bank. The Contractor shall make recommendations to mitigate any potentially negative environmental impacts.

Task 7 Deliverable: The Contractor shall prepare a report of all work performed under Task 7. The Task 7 Deliverable shall be included in the Final Report.

Task 8: Final Report

The Contractor shall prepare and deliver to the Grantee, each of the Companies, and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference (“Final Report”). The Final Report shall be organized according to the above tasks, and shall include all deliverables, training materials, and documents that have been provided to the Grantee and each of the Companies. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

Notes:

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.

- (2) The Contractor, Grantee, and each of the Companies shall be careful to ensure that the public version of the Final Report contains no security or confidential information.
- (3) The Grantee, each of the Companies, and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.

ANNEX 6

COMPANY INFORMATION

A. Company Profile

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), the information below must be provided for each subcontractor.

1. Name of firm and business address (street address only), including telephone and fax numbers:

2. Year established (include predecessor companies and year(s) established, if appropriate).

3. Type of ownership (e.g. public, private or closely held).

4. If private or closely held company, provide list of shareholders and the percentage of their ownership.

5. List of directors and principal officers (President, Chief Executive Officer, Vice-President(s), Secretary and Treasurer; provide full names including first, middle and last). Please place an asterisk (*) next to the names of those principal officers who will be involved in the Technical Assistance.

6. If Offeror is a subsidiary, indicate if Offeror is a wholly-owned or partially-owned subsidiary. Provide the information requested in items 1 through 5 above for the Offeror's parent(s).

7. Project Manager's name, address, telephone number, e-mail address and fax number .

B. Offeror's Authorized Negotiator

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

C. Negotiation Prerequisites

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Technical Assistance as proposed and reflect such impact within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

D. Offeror's Representations

Please provide exceptions and/or explanations in the event that any of the following representations cannot be made:

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of _____ . The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Technical Assistance. The Offeror is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.

2. The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of _____. The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

Signed: _____
(Authorized Representative)

Print Name: _____

Title: _____

Date: _____

Subcontractor Profile

1. Name of firm and business address (street address only), including telephone and fax numbers.
 2. Year established (include predecessor companies and year(s) established, if appropriate).

E. Subcontractor's Representations

If any of the following representations cannot be made, or if there are exceptions, the subcontractor must provide an explanation.

1. Subcontractor is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of _____. The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the Offeror is selected, to execute and deliver a subcontract to the Offeror for the performance of the Technical Assistance and to perform the Technical Assistance. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
 2. Neither the subcontractor nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.

3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

Signed: _____
(Authorized Representative)

Print Name: _____

Title: _____

Date: _____

ANNEX 7

Sample Experience

Assignment name:	Approx. value of the contract (in current US\$ or Euro):
Country: Location within country:	Duration of assignment (months):
Client Contact Name:	
Address:	Approx. value of the services provided by your firm under the contract (in current US\$ or Euro):
Start date (month/year): Completion date (month/year):	Status and Comment
Name of associated Consultants, if any:	Name of senior professional staff of your firm involved and functions performed (indicate most significant profiles such as Project Director/Coordinator, Team Leader):
Narrative description of Project:	
Description of actual services provided by your staff within the assignment:	